Bay Area Air Quality Management District
375 Beale Street, Suite 600
San Francisco, CA 94105
(415) 749-5000

Permit Evaluation and Statement of Basis For A Significant Revision to the Major Facility Review Permit for Chevron Products Company Facility #A0010

Facility Address:
841 Chevron Way
Richmond, CA 94802

Mailing Address:
Post Office Box 1272
Richmond, CA 94802

November 2017

Title V Significant Revision Application #26254

By:

Bhagavan Krishnaswamy
Supervising Air Quality Engineer

Title V Permit for Chevron Products Company

Statement of Basis

General Description of an Oil Refinery:

This facility is a typical full-scale oil refinery, which processes crude oils and other feedstocks into refined petroleum products, primarily fuel products such as gasoline and fuel oils. It processes crude oil and distills it, under atmospheric pressure, into its primary components: gases (light ends), gasolines, kerosene and diesels (middle distillates), heavy distillates, and heavy bottoms. The heavy bottoms go on to a vacuum distillation unit to be distilled again, this time under a vacuum, to salvage any light ends or middle distillates that did not get separated under atmospheric pressure; the heaviest bottoms continue on to a coker or an asphalt plant.

Other product components are processed by downstream units to remove less desirable impurities (hydrotreated), cracked (catalytic or hydrocracking), reformed (catalytic reforming), or alkylated (alkylation) to form gasolines and high-octane blending components, or to have sulfur or other impurities removed to make over-the-road diesel (low sulfur) or off-road diesel (higher sulfur). Depending on the process units in a refinery and the crude oil input, an oil refinery can produce a wide range of salable products: many different grades of gasoline and gasoline blend stocks, several grades of diesel, kerosene, jet and aviation fuel, fuel oil, bunker fuels, waxes, solvents, sulfur, coke, asphalt, or chemical plant feedstocks.

A more detailed description of petroleum refinery processes and the resulting air emissions may be found in Chapter 5 of EPA's publication AP-42, Compilation of Air Pollutant Emission Factors. This document may be found at: https://www3.epa.gov/ttn/chief/ap42/ch05/index.html

The principal sources of air emissions from the Chevron Products Company refinery are:

- Combustion units (furnaces, boilers, and cogeneration facilities)
- FCC (Fluidized Catalytic Cracking)
- Storage tanks
- Fugitive emissions from pipe fittings, pumps, and compressors
- Sulfur plants
- Wastewater treatment facilities

Combustion unit emissions are generally controlled through the use of burner technology, steam injection (turbines), or selective catalytic reduction. Emissions from the FCCU are controlled through hydrotreating the feed, the use of catalysts to remove impurities, the use of improved catalyst regeneration, and electrostatic precipitators. Storage tank emissions are controlled through the use of add on control and or fitting loss control. Fugitive emissions have been minimized per Regulation 8-18 through the use of inspection and maintenance frequencies. Sulfur plants are equipped with tail gas units to reduce emissions. Wastewater treatment

facilities are controlled by covering units, gasketing covers, and add on controls such as, carbon canisters.

The Chevron Richmond Refinery:

On July 3, 1902, the Richmond Refinery began operations. At that time, it was by far the largest refining plant on the Pacific Coast and one of the largest in the world. Over the decades, the Richmond Refinery has steadily expanded. Today, this refinery produces primarily gasoline, jet and diesel fuels, and lubricants.

The refinery is permitted to process about 257,200 barrels of crude oil every day. All crude oil processed at the Richmond Refinery arrives by tanker. The Long Wharf consists of berths for four tankers and 2 barges. Ships dock at the Wharf and unload their cargo into storage tanks via pipes. The Wharf is equipped with a marine vapor recovery unit capable of achieving 95% reduction of hydrocarbons as the ships are loaded. The refinery has hundreds of storage tanks for crude oil and refined products. The largest tanks on the property can hold 750,000 barrels.

The processing of crude consists of four basic steps: distillation, extraction, conversion, and treating. The refinery has three main processing areas: Distillation & Reforming, Cracking, and Hydroprocessing.

In the Distillation & Reforming Area, there is a single large two-stage crude unit that starts the separation of the crude into light (gas), medium (jet and diesel) and heavy (gas oils) components. It takes the residuum (the bottom of the crude unit) and sends it to the Solvent Deasphalting Plant in the Hydroprocessing Area. Gas oil is extracted from the residuum oil and mixed with a solvent that draws the gas oil away leaving only tar behind. The solvent is then distilled from the gas oil and recycled. The extracted gas oil becomes feedstock for the fluidized catalytic cracking unit (FCCU).

The Richmond Refinery converts gas oil into gasoline, jet and diesel fuels, and lubricating oil, using a series of processing plants. Most of the oil is treated with hydrogen to remove contaminants before the conversion processes begin. Heat and catalysts are then used to convert the gas oil to lighter products.

One conversion method is called cracking because it literally splits (cracks) the heavy hydrocarbon molecules into lighter ones. The Richmond Refinery uses two cracking methods: fluid catalytic cracking and hydrocracking. The FCCU located in the Cracking Area uses high temperature catalyst to crack heavy gas oil mostly into gasoline. Lighter gas oil is converted, using a process called hydrocracking, in the Isomax Unit located in the Hydroprocessing Area. Hydrocracking involves mixing gas oil, hydrogen and catalyst under high pressure and high temperature to make both jet fuel and gasoline. They blend most of the products from the FCCU and the Isomax directly into transportation fuels such as gasoline and jet fuel.

While the cracking process breaks most of the gas oil into gasoline and jet fuel, it also breaks off some pieces that are lighter than gasoline. Since Richmond Refinery's primary focus is on making transportation fuels, they recombine lighter components in the Alkylation Unit. This

process takes the small molecules and recombines them in the presences of catalyst to convert them into gasoline components.

Much of the gasoline that comes from the Crude Unit or from the cracking units does not have enough octane to burn well in cars. The refinery's Distillation & Reforming Area contains two reformers, where they rearrange and change gasoline to give it the high-octane cars need. The reforming process removes hydrogen from the low-octane gasoline. The hydrogen is recycled for use in the hydrotreating units.

The products from the Crude Unit and the feeds to the conversion units contain some natural impurities, such as sulfur and nitrogen. Using a process called hydrotreating (a milder version of hydrocracking), these impurities can be removed to reduce air pollution when their fuels are used.

In addition to transportation fuels, the Richmond Refinery also makes lubricating oils and waxes. In the refinery's lube oil facility, heavy gas oil from the Crude Unit is converted into several grades of lubricating oil.

The Richmond Refinery also produces wax from crude oil. Food-grade wax, for example is used to make waterproof corrugate (cardboard boxes) for produce, poultry and seafood, paper cups, sandwich bags, and waxed paper.

A final step is the blending of products. Gasoline, for example, is blended from treated components made in several processing units. Over 75 percent of the Richmond Refinery's products are primary transportation fuels: gasoline, jet and diesel. About 15 percent is fuel oil for ships and power plants. Four percent are lubricating oils for a wide variety of machinery, including cars. The remaining 5 percent is variety of products like propane, aviation gasoline and wax.

This significant revision includes the following applications:

Application 26254 - the primary subject of this significant revision is associated with NSR Application 26252. The District reviewed and issued Chevron an Authority to Construct (AC) to dome a new external floating roof tank (S-3230) in gasoline service under Application 26252. S-3230 triggered BACT for POC and required Chevron to install District approved BACT compliant fugitive components and tank fittings. Permit condition 25848 issued with the AC memorializes the type of BACT compliant fugitive components and tank fittings Chevron will have to install in S-3230.

The District's proposed action to revise Chevron's Title V permit to incorporate changes stemming from NSR Application 26252 qualifies as a "Significant Permit Revision" pursuant to District Regulation 2, Rule 6, section 226.5 as shown below:

"Any revision to a federally enforceable condition contained in a major facility review permit that can be defined as follows:

226.1 The incorporation of a change considered a major modification under 40 CFR Parts 51 (NSR) or 52 (PSD);

226.2 The incorporation of a change considered a modification under 40 CFR Parts 60 (NSPS), 61 (NESHAPS), or Section 112 of the Clean Air Act (HAP);

226.3 Any significant change or relaxation of any applicable monitoring, reporting or recordkeeping condition;

226.4 The establishment of or change to a permit term or condition allowing a facility to avoid an applicable requirement, including:

4.1 a federally enforceable emission limit assumed in order to avoid classification as a modification under any provision of Title I of the federal Clean Air Act, or

4.2 an alternative hazardous air pollutant emission limit pursuant to Section 112(i)(5) of the Clean Air Act;

226.5 The establishment of or change to a case-by-case determination of any emission limit or other standard;

226.6 The establishment of or change to a facility-specific determination for ambient impacts, visibility analysis, or increment analysis on portable sources; or

226.7 The incorporation of any requirement promulgated by the U. S. EPA under the authority of the Clean Air Act provided that three or more years remain on the permit term."

In addition to addressing changes from Application 26254, this revision also addresses changes associated with 4 administrative amendments (Applications 25542, 26757, 26819and 27086) and

6 minor revisions (Applications 24893, 25406, 25796, 25961, 26169, and 26685). Table 1 summarizes changes to the Title V permit resulting from each of the above revisions.

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
26254 (NSR: 26252) Type of Revision: Significant Source(s) affected: S-3230	**"Domed" External Floating Roof Tank:** The District issued Chevron an Authority to Construct for a new domed external floating roof tank S-3230* (T-3228) for storing gasoline with TVP < 11 psia. *To be consistent with tank numbering in the field, Chevron requested if the BAAQMD S- number can be changed to match the T-number. The source number cannot be changed because S-3228 was previously assigned to a new caustic storage tank that was permitted under A# 12842 in the 2008 timeframe.	**Tank and Wastewater Cluster Index:** Added S-3230 to Internal Floating Roof Tanks Cluster 24. **Table II.A.1:** **1.** Added S-3230 **Table IV.F.1.11:** **1.** Added S-3230 **2.** Added permit condition 25848. **Section VI:** **1.** Added permit condition 25848. **Table VII.F.1.11:** **1.** Added S-3230 **2.** Added applicable limits and monitoring requirements of permit condition 25848. **Table IX-B-3:** Added S-3230.
25542 (NSR: none) Type of Revision: Administrative Amendment Source(s) affected: S-1428, 1506	**Addition of an exemption:** Reg. 2-1-123.3.10 (API ≤ 25) exemption was added in addition to Reg. 2-1-123.3.3 (flash point) exemption. On June 10, 2013 Chevron discovered that the above tanks exceeded the flash point exemption criteria i.e., materials be stored/loaded ≤ 36ºF below the flash point.	**Table II.C:** In "Comments" column: Replaced "DO" w/ "flash point" for 2-1-123.3 • Added 2-1-123.3.10 API

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
	Chevron will confirm compliance with Reg. 2-1-123.3 exemption by sampling and performing lab analysis (via ASTM Method D93B) of the tank contents on a quarterly basis. Chevron will confirm compliance with Reg. 2-1-123.10 exemption by sampling and performing lab analysis (via ASTM Method D4052) of the tank contents on a quarterly basis. Chevron will maintain records to demo tanks are exempt from requiring District permits.	
26757 (NSR: 26698) Type of Revision: Administrative Amendment Source(s) affected: S-4155	**Typo correction:** A multiplier in part 1 of permit condition 8773 for S-4155 was corrected from "0.01077" to "0.01017" as shown below: "The NOx mass rate shall be calculated as follows based on the concentration (ppm NOx, corrected to 3% O2, dry) as measured by the CEM and the firing rate (BTU/hr) based on the fuel gas meter for S-4155: lb NOx/hour = [ppm NOx](1 lb-mole/386 scf)(46 lb NO2/lb-mole NO2)(~~0.01077~~0.01017 dscf flue gas/BTU)[million BTU/hour]"	**Section VI:** **1.** Corrected multiplier to 0.01017 in part 1 of permit condition 8773 (for S-4155). **2.** Added "Basis" where applicable **3.** Expanded acronyms where applicable (for example, cum inc → cumulative increase)
26819 (NSR: 26811) Type of Revision: Administrative Amendment Source(s) affected:	**Changes to NOx Box permit condition:** Sources at Chevron not equipped with NOx CEMS are required by permit condition 21232 to operate within the confines of their "NOx box" operating window to demonstrate compliance with the refinery-wide NOx emission limit in Regulation 9-10-301. For reasons stated above, S-4068, 4069,	**Section VI:** **1.** Amended preamble to part 3 of permit condition 21232. **2.** Added part 3.C **3.** Deleted June 1, 2004 date in part 4. **4.** Amended preamble to part 5A; amended NOx box ranges for S-4189 and added Note 1. **5.** Amended part 5.B.

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
S-4068, 4069, 4154, 4158, 4188, 4189	4154, 4158, 4188, 4189 are subject to permit condition 21232. The December 2010 amendments to Regulation 9-10 instilled a new definition for "curtailed operation", which required changes to permit condition 21232.	**6.** Added part 5.C. **7.** Renumbered old part 5.C to 5.D.
27086 (NSR: 27085) Type of Revision: Administrative Amendment Source(s) affected: S-4188	**Changes to NOx Box permit condition:** Sources at Chevron not equipped with NOx CEMS are required by permit condition 21232 to operate within the confines of their "NOx box" operating window to demonstrate compliance with the refinery-wide NOx emission limit in Regulation 9-10-301. For reasons stated above, S-4188 is subject to permit condition 21232. On December 19, 2013, S-4188 operated outside its NOx box operating window. Part 6 of permit condition 21232 required Chevron to conduct a source test on June 13, 2014 by replicating conditions that caused S-4188 to be out of compliance and amend (~expand) the NOx box operating window if needed to incorporate the data points determined from the source test. Part 5 of permit condition 21232 was amended to include the data points from the June 2014 source test.	**Section VI:** **1.** Amended NOx box range for S-4188 in part 5.A. of permit condition 21232.
24893 (NSR: 24892) Type of Revision: Minor Source(s) affected:	**Emergency standby diesel fire pump engines:** The District issued Chevron a Permit to Operate to install two identical 2010 model year 700 BHP Tier 3 CARB certified emergency standby diesel fire pump engines that will provide motive power to two separate direct drive fire pumps which would supply water to	**Table II.A.1:** **1.** Added S-7541 and S-7542 **Table IV.A.4.1:** **1.** Added S-7541 and S-7542 **2.** Amended Regulation 9-8-501 to state it doesn't

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
S-7541, 7542	Chevron's fire protection system during an emergency/testing.	apply to S-7541 and S-7542 **3.** Updated NSPS IIII effective date and stated rule applies to S-7541 and S-7542 **4.** Added S-7541 and S-7542 to list of engines subject to permit condition 22850 **Section VI:** **1.** Added S-7541 and S-7542 to list of engines subject to permit condition 22850 **Table VII.A.4.1:** **1.** Added S-7541 and S-7542 **2.** Amended part 1 of permit condition 22850 to state 50 hour/year limit for reliability and testing applies to S-7541 and S-7542
25406 (NSR: 25410) Type of Revision: Minor Source(s) affected: S-7543	**Emergency standby diesel fire pump engine:** The District issued Chevron a Permit to Operate to install a 2012 model year 351 BHP emergency standby diesel fire pump engine that meets EPA/CARB Tier 3 Interim Off-road standard that will provide motive power to a direct drive fire pump which would supply water to Chevron's fire protection system during an emergency/testing.	**Table II.A.1:** **1.** Added S-7543 **Table IV.A.4.1:** **1.** Added S-7543 **2.** Amended Regulation 9-8-501 to state it doesn't apply to S-7543 **3.** Updated NSPS IIII effective date and stated rule applies to S-7543 **4.** Added S-7543 to list of engines subject to permit condition 22850 **Section VI:**

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
		1. Added S-7543 to list of engines subject to permit condition 22850 **Table VII.A.4.1:** **1.** Added S-7543 2. Amended part 1 of permit condition 22850 to state 50 hour/year limit for reliability and testing applies to S-7543
25796 (NSR: 25793) Type of Revision: Minor Source(s) affected: S-4490	**Sulfur Loading Truck Rack:** The District issued Chevron an Authority to Construct a new molten sulfur loading truck rack (S-4490) that will replace (S-4396) and will be installed downstream of two existing molten storage tanks (S-3141 and S-3226) and will be abated by a new scrubber system that will consist of a water scrubber in series with a caustic scrubber (A-310).	**Table II.A.1:** **1.** Added S-4490. **Table II.A.1:** **1.** Added A-310 **Table IV.E.3.1:** **1.** Added S-4490 **2.** Added permit condition 25814 parts 1 to 8. **Section VI:** **1.** Added permit condition 25814. **Table VII.E.3.1:** **1.** Added S-4490 **2.** Added applicable limits/monitoring requirements of permit condition 25814.
25961 (NSR: 25960) Type of Revision: Minor Source(s) affected:	**Tank storing H_2S scavenger:** The District issued Chevron a Permit to Operate a new 7,000 gallon horizontal fixed roof tank (~chemical trailer container) that will store and dispense proprietary amines and 5% by wt. IPA into a pipeline carrying gas oils, etc. from the refinery for loading into marine vessels/barges at the wharf.	**Table II.A.1:** **1.** Added S-4375. **Table IV.F.1.0:** **1.** Added S-4375 **2.** Added permit condition 25785. **Section VI:**

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
S-4375		**1.** Added permit condition 25785. **Table VII.F.1.0:** 1. Added S-4375 **2.** Added applicable limits/monitoring requirements of permit condition 25785.
26169 (NSR: 26168) Type of Revision: Minor Source(s) affected: S-3235	**Emergency standby diesel storm water pump engine:** The District issued Chevron a Permit to Operate to install a 2013 model year CARB certified 154 BHP EPA Interim Tier 4/ALT NOx emergency standby diesel engine that will provide motive power to an emergency storm water pump and replace S-7518.	**Table II.A.1:** **1.** Added S-3235 **Table II.A.2:** **1.** Deleted S-7518 **Table II.B:** **1.** Added DPF A-3235 that abates S-3235 **2.** Deleted DPF A-7518 that use to abate S-7518 **Table IV.A.4.1:** **1.** Added S-3235 to and deleted S-7518 from table **2.** Amended Regulation 9-8-501 to state it doesn't apply to S-3235 **3.** Updated NSPS IIII effective date and stated rule applies to S-3235 **4.** Deleted S-7518 from sources cited under permit condition 20225 in preamble and parts 4 & 5. **5.** Added S-3235 to list of engines subject to permit condition 22850 **Section VI:** **1.** Added S-3235 to list of engines subject to permit condition 22850

Table 1		
Title V Application #	**Application Summary**	**Summary of changes in Title V permit**
		2. Deleted S-7518 in permit condition 20225 **Table VII.A.4.1:** **1.** Added S-3235 to and deleted S-7518 from table **2.** Deleted S-7518 from sources subject to recordkeeping requirements for Regulation 9-8-330 and permit condition 20225. **3.** Amended part 1 of permit condition 22850 to state 50 hour/year limit for reliability and testing applies to S-3235
26685 (NSR: 26684) Type of Revision: Minor Source(s) affected: S-4401	**Prime Diesel Engine:** The District issued Chevron an Authority to Construct to install a 2015 model yeat CARB certified 282 BHP "Tier 4 Final" engine that will supply electrical power to the Ranch Area Maintenance Yard.	**Table II.A.1:** **1.** Added S-4401 **Table IV.A.4.1:** **1.** Added S-4401 **2.** Amended District /Federal requirements applicable (and not applicable) to S-4401. **3.** Added permit condition 26127. **Section VI:** **1.** Added permit condition 26127. **Table VII.A.4.1:** **1.** Added S-4401 **2.** Added applicable limit and monitoring requirements of permit condition 26127.

ENGINEERING EVALUATION REPORT
Plant 10: Chevron Products Company
Application 26252: S-3230 (New Domed EFR tank storing gasoline)

BACKGROUND

Chevron Products Company (Chevron) has applied to obtain an Authority to Construct (ATC) the following equipment:

S-3230 Domed External Floating Roof Storage Tank (T-3228) (unheated)
Tank location: Blending & Shipping (B&S) Area Business Unit
Material stored: Gasoline; TVP < 11 psia (76 kPa)
Tank volume: 150,000 barrel (BBL)[1]; 23,848 m^3
Tank dimension: Diameter (128 feet) x height (76 feet)
Throughput: 10,000,000 BBL/year

EMISSIONS SUMMARY

The US EPA TANKS 4.0.9d model was used to estimate S-3230' maximum daily and annual POC emissions. Tank attributes summarized in Table 1 below were used to perform the TANK model runs.

Table 1: Tank details and fittings info	
Roof	Pontoon
Construction	Welded
Primary seal	Mechanical shoe
Secondary seal	Rim-mounted
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	4
Vacuum Breaker (10-in. Diam.)/Weighted Mechanical Actuation, Gasketed	1
Slotted Guide-Pole/Sample Well/Gask Sliding Cover, with Pole Sleeve, Wiper, and an external flexible barrier/cover that covers all the slots	1
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mechanical Actuation, Gasketed	1
Roof Leg (3-in. Diameter)/Adjustable, Pontoon Area, Sock	22
Roof Leg (3-in. Diameter)/Adjustable, Center Area, Sock	30

Assuming 1 tank turnover per day, the maximum daily POC emissions from S-3230 was estimated via the TANKS model to be 22 lbs/day. The maximum annual POC emissions from S-3230 was estimated to be 3,662 lbs/year assuming 10 million barrels of gasoline would be throughput annually and that the tank would go through 57 tank turnovers per year (10,000,000 ÷

[1] Per Table 0-1 "Summary of Chevron Refinery Replacement and New Tanks" in document titled "Initial Study/Draft Mitigated Negative Declaration for Chevron Tank Replacements" prepared by the City of Richmond.

174,183). The fugitive components (47 valves, 59 flanges, 8 connectors, 1 pump, 1 pressure relief device (PRD), and 1 catch basin/manhole) that will be installed at S-3230 will result in POC emissions of 6 lbs/day and 762 lbs/year. The combined (tank + fugitive) daily and annual POC emissions from S-3230 are 28 lbs/day (22 + 6) and 4,424 (3,662 + 762) lbs/year, respectively.

POC and toxic air contaminant (TAC) emissions from S-3230 and its associated fugitive components are summarized in Table's 1 through 5 of Attachment 1.

CUMULATIVE INCREASE

The cumulative increase in POC emissions from S-3230 and its fugitive components is 2.21 TPY.

TOXIC HEALTH RISK SCREENING ANALYSIS (HRSA)

A HRSA was required because the annual emissions of benzene (293 lbs/year from S-3230 and 38 lbs/year from S-3230' fugitive components), ethylbenzene (213 lbs/year from S-3230), and naphthalene (105 lbs/year from S-3230 and 15 lbs/year from S-3230' fugitive components) exceeded their corresponding chronic toxic air contaminant trigger levels of 3.8 lbs/year (for benzene), 43 lbs/year (for ethylbenzene), and 3.2 lbs/year (for naphthalene) in Table 2-5-1 of Reg. 2-5.

The HRSA determined the maximum incremental cancer risk to be 0.7 in a million, the chronic hazard index to be of 0.0008, and the acute hazard index to be 0.004, and found the above risk levels to be acceptable.

BACT (BEST AVAILABLE CONTROL TECHNOLOGY)

Per Regulation 2-2-301, BACT is only triggered when emissions from a new source or modified source have the potential to emit 10 lbs or more per highest day. The maximum daily emissions from S-3230 and its associated fugitive components are 28 lbs/day. Therefore, BACT is triggered.

A BACT analysis was completed and is included as Appendix A. As shown in the analysis, BACT 1 as listed in Section 4 of the BACT/TBACT Workbook was determined to be not cost effective. Therefore, BACT 2 ("Achieved in Practice") will be required. Per the BACT/TBACT Workbook, "Achieved in Practice" BACT for S-3230 is the following:

- a District approved roof with a liquid mounted primary seal and zero gap secondary seal,
- no ungasketed roof penetrations,
- no slotted pipe guide pole unless equipped with float and wiper seals,
- no adjustable roof legs unless fitted with vapor seal boots or equivalent, and
- a dome.

Permit conditions requiring the above will be attached to the permit to confirm compliance with BACT.

OFFSETS

The cumulative increase in POC emissions of 2.21 TPY will be offset via ERC Certificate # 70.

STATEMENT OF COMPLIANCE

S-3230 is subject to and is expected to comply with Regulation 8 "Organic Compounds", Rule 5 "Storage of Organic Liquids". Specifically, the tank is subject to Reg. 8-5-301 (control requirements for storage tanks), 320 (fitting requirements for floating roof tanks), 321 (primary seal requirements), 322 (secondary seal requirements), 328 (tank degassing requirements), 331 (tank cleaning requirements), and 332 (sludge handling requirements). The District's Compliance and Enforcement staff will verify S-3230' compliance with the above sections during their routine inspections.

S-3230 is subject to and is expected to comply with the requirements of 40 CFR 60 Subpart Kb (NSPS Kb) "Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984" per 60.110 b (a) because its storage capacity is ≥ 75 m^3 (23,848 m^3); it will be constructed after July 23, 1984; and it will be used to store a volatile organic liquid which can emit volatile organic compounds (as defined in 40 CFR 51.100) into the atmosphere.

S-3230 will not be used to store benzene waste streams. Instead the tank will be used to store finished gasoline product/gasoline components that contain 5% by wt. benzene as one of their components. Therefore, 40 CFR 61, Subpart FF (BWON) "National Emission Standards for Benzene Waste Operations" does not apply to S-3230.

S-3230 will comply with 63.640 (n) in 40 CFR 63, Subpart CC (MACT CC) "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries" via NSPS Kb.

S-3230' tank fittings summarized in Table 1 above are exempt from Regulation 8 "Organic Compounds", Rule 18 "Equipment Leaks" per Reg. 8-18-115. However, Reg. 8-18 requirements apply to S-3230' fugitive components (47 valves, 59 flanges, 8 connectors, 1 pump, 1 PRD, and 1 catch basin/manhole). The only exception to the above is the PRD. If the PRD is installed on S-3230 then it is subject to Reg. 8-5-303 and is exempt from Reg. 8-18 per Reg. 8-18-115. The PRD is also exempt from Regulation 8 "Organic Compounds", Rule 28 "Episodic Releases From Pressure Relief Devices at Petroleum Refineries and Chemical Plants" per Reg. 8-28-112.

This application is considered to be ministerial under the District's Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 4 "Organic Liquid Storage Tank".

Chevron has stated that S-3230 is not part of the Renewal Project[2] (currently referred to as the Modernization Project). The City of Richmond reviewed a Replacement Tanks Project that included S-3230 and determined that the Tank Replacement Project had independent utility from

[2] Refer to footnote 1 in document titled "Initial Study/Draft Mitigated Negative Declaration for Chevron Tank Replacements" prepared by the City of Richmond.

the Chevron Renewal Project and proceeded under a separate CEQA process. The City of Richmond issued Chevron a Mitigated Negative Declaration for S-3230 and four other tanks on January 18th, 2011. Chevron began construction of the replacement tanks in 2012 including obtaining an Authority to Construct for the first tank (Tank 3229) in a separate application. Although not part of the Modernization Project, the Replacement Tanks Project was identified in the Modernization Project EIR as a cumulative project. The District has reviewed the information provided by Chevron and is satisfied that there is no necessary functional interrelationship between the Modernization Project and the Tank Replacement Project. The Modernization Project does not depend on the Tank Replacement Project, and the Tank Replacement Project has independent utility even if the Modernization Project does not move forward.

S-3230 is greater than 1,000 feet from the nearest K-12 school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

The proposed issuance of an ATC to S-3230 will not trigger a PSD review.

PERMIT CONDITIONS (Condition # 25848)

Chevron Richmond Refinery (Plant # 10)
S-3220 Gasoline Storage Tank (T-3228)
Application 26252 – July 2014

1. The owner/operator of S-3230 (one 150,000 barrel domed external floating roof storage tank) shall not exceed the following throughput limit during any consecutive twelve-month period: Gasoline (TVP < 11 psia) – 10,000,000 barrels. (Basis: Cumulative Increase)

2. The owner/operator may store alternate liquid(s) other than the material specified in Part 1 and/or usage in excess of those specified in Part 1, provided that the owner/operator can demonstrate that all of the following are satisfied:

    a. Total POC emissions (including fugitive component emissions) from S-3230 do not exceed 28 pounds per day or 4,424 pounds per year in any consecutive twelve month period; and
    b. The use of these materials does not increase toxic emissions above any risk screening trigger level of Table 2-5-1 in Regulation 2-5.

    (Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:
    a. Quantities of each type of liquid stored at this source on a monthly basis.
    b. If a material other than those specified in Part 1 is stored, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;

c. Monthly throughput and/or emission calculations shall be totaled for each consecutive twelve-month period.

All records shall be retained on-site for five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations.
(Basis: Cumulative Increase; Toxics)

4. Not more than 30 days after the start-up of S-3230, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components in liquid service: Valves: 47; Flanges: 59; Connectors: 8; Pump seals: 1; PRD: 1; and Catch basin/manhole:1
(Basis: Cumulative Increase, offsets, toxics risk screen)

5. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator.
(Basis: offsets)

6. The owner/operator shall install valves, in light hydrocarbon service, that are of District approved BACT compliant technology (bellows valves, diaphragm valves, live loaded valves, or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
(Basis: BACT, Regulation 8-18, toxics risk screen)

7. The owner/operator shall install flanges and connectors, in light hydrocarbon service, that are of District approved BACT compliant technology (graphitic gaskets or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
(Basis: BACT, Regulation 8-18, toxics risk screen)

8. The owner/operator shall install pump seals, in light hydrocarbon service, that are of District approved BACT compliant technology (double mechanical seals with barrier fluid or the equivalent) such that fugitive organic emissions shall not exceed 500 ppm.
(Basis: BACT, Regulation 8-18, toxics risk screen)

9. The owner/operator shall ensure the pressure relief valve installed on S-3230 complies with Regulation 8-5-303. If the owner/operator installs additional pressure relief valves, they shall meet applicable requirements of Regulation 8, Rule 5, Rule 18, Rule 28
(Basis: Regulation 8-5)

10. In accordance with the provisions of Regulation 8-18, the owner/operator shall integrate all new fugitive equipment in organic service installed as part of S-3230 into the facility fugitive equipment monitoring and repair program.
(Basis: BACT, Regulation 8-18)

11. The owner/operator shall control organic emissions from S-3230 by a liquid-mounted primary mechanical seal and a zero-gap secondary wiper seal that meet the design criteria in Regulation 8, Rule 5. There shall be no ungasketed roof penetrations. Each roof fitting shall be of the design, which yields the minimum roof fitting losses. The following list indicates the type of control required for a variety of typical roof fittings. Control techniques for roof fittings not included in this list shall be subject to prior District approval, prior to installing the roof on the tank. (BACT)

Fitting Type	Control Technique
Access hatch	Bolted cover, gasketed
Guide pole/Well	Slotted with a pole sleeve that projects below liquid surface a zero-gap pole wiper and an exterior flexible barrier/cover that covers all of the slots
Gauge float well	Bolted cover, gasketed
Gauge hatch/Sample well	Weighted mechanical actuation, gasketed
Vacuum breaker	Weighted mechanical actuation, gasketed
Roof drain	none
Roof leg	Adjustable, fitted with vapor seal boots
Rim vent	Weighted mechanical actuation, gasketed

(BACT)

RECOMMENDATION

Issue Chevron an Authority to Construct for the following equipment:

S-3230 Domed External Floating Roof Storage Tank (T-3228) (unheated)
Tank location: Blending & Shipping (B&S) Area Business Unit
Material stored: Gasoline; TVP < 11 psia (76 kPa)
Tank volume: 150,000 barrel (BBL); 23,848 m^3
Tank dimension: Diameter (128 feet) x height (76 feet)
Throughput: 10,000,000 BBL/year

_____

Bhagavan R. Krishnaswamy

APPENDIX A

BACT Analysis

POC Best Available Control Technology (BACT) Analysis
External Floating Roof Tank
Chevron Products Company – Richmond Refinery
Richmond, California

1. Process Description

This BACT analysis is for POC emissions from a new domed, external floating roof storage tank with a storage capacity of 150,000 barrels and an annual gasoline throughput of 10,000,000 barrels per year at the Chevron Richmond Refinery.

2. BACT Applicability

District Regulation 2-2-301.1 states that BACT shall be applied to a new source if the source has the potential to emit 10.0 pounds or more per highest day of POC emissions.

The storage tank's potential to emit uncontrolled POC emissions is estimated to be 28 pounds per day. Therefore, BACT is required.

3. BACT Analysis Methodology

District Regulation 2-2-206 defines BACT as the more stringent of either:

- *The most effective emission control device or technique which has been successfully utilized for the type of equipment compromising such a source; or*
- *The most stringent emission limitation achieved by an emission control device or technique for the type of equipment compromising such a source; or*
- *Any emission control device or technique determined to be technologically feasible and cost-effective by the APCO; or*
- *The most effective emission control limitation for the type of equipment compromising such a source which the EPA states, prior to or during the public comment period, is contained in an approved implementation plan of any state, unless the applicant demonstrates to the satisfaction of the APCO that such limitations are not achievable. Under no circumstances shall the emission control required be less stringent than the emission control required by any applicable provision of federal, state or District laws, rules or regulations.*

The first two definitions are called "achieved in practice" whereas the third definition is "technologically feasible and cost effective".

Regulation 2-2-206 also requires the APCO to "*publish and periodically update a BACT/TBACT Workbook specifying the requirements for commonly permitted sources, BACT will be determined for a source by using the workbook as a guidance document or, on a case-by-case basis, using the most stringent definition of this Section 2-2-206*".

Within the District's BACT/TBACT Workbook, BACT defined as "technologically feasible and cost effective" is designated BACT 1 whereas BACT defined as "achieved in practice" is designated BACT 2.

Section 4 ("*Storage tank – External Floating Roof, Organic Liquids*" - Document # 167.1.2, dated 9/19/2011) of the BACT/TBACT Workbook has BACT guidelines for external floating roof storage tanks. As the guidelines were last updated within the past three years, a comprehensive BACT analysis of identifying and ranking all control technologies by technological feasibility is not warranted. Therefore, the technologically feasible option (BACT 1) listed in the guidelines will be analyzed for cost effectiveness. If determined cost effective, BACT 1 will be required. If not, the "achieved in practice" BACT 2 will be required.

4. POC BACT Determination

4.1 Identify All Control Technologies

As discussed above, this step is not required. Per the BACT Workbook, BACT 1 for an external floating roof tank is a vapor recovery system with an overall system efficiency equal to or greater than 98 percent. The typical technology is listed as a thermal incinerator.

4.2 Eliminate Technologically Infeasible Options

As discussed above, this step is not required.

4.3 Rank Remaining Options By Control Effectiveness

As discussed above, this step is not required.

4.4 Cost Effectiveness Analysis

Per the BACT/TBACT Workbook, the District has adopted the "levelized cash flow method", commonly referred to as the annualized cost method. In this method, the capital cost of installing the abatement equipment is converted to an annualized cost over the expected life of the equipment through a capital recovery factor (CRF).

Cost data from a Chevron-supplied estimate for the installed equipment cost is shown in Table 1.

Table 1 – Installed Equipment Costs

	Capital			Expense			
DESCRIPTION	**Materials**	**Labor**	**Contract**	**Materials**	**Labor**	**Contract**	**Total**
DIRECT COSTS							
Thermal Oxidizer	$100,000	$14,100					$114,100
Site Development			$63,636				$63,636
Foundations/Concrete			$410,262				$410,262
Structural		$38,874	$47,600				$86,474

Piping	$119,108	$404,177					$523,285
Electrical	$19,450	$60,729	$32,000				$112,179
Instrumentation	$32,745	$46,560					$79,305
Insulation/Painting	$24,800	$58,300	$78,612				$161,712
Fire Protection					$75,075		$75,075
Cranes			$38,300				$38,300
SUBTOTAL DIRECT COSTS	$296,103	$622,740	$670,410		$75,075		$1,664,328
TOTAL DIRECT COSTS	$1,589,253			$75,075			$1,664,328
INDIRECT COSTS							
Consumables/Tools		$18,682			$2,252		$20,934
Engineering		$397,313			$18,768		$416,081
Equipment Rental		$18,682					$18,682
Contaminated Material Disposal	$2,961						$2,961
Fees & Permits	$6,227						$6,227
Field Supervision		$62,273			$7,507		$69,780
Freight	$17,766						$17,766
Safety Train/Mobilization		$18,682					$18,682
Tax (expenses)	$28,870						$28,870
Temporary Facilities		$25,862					$25,862
Inspection		$31,136					$31,136
SUBTOTAL INDIRECT COSTS	$55,824	$572,630			$28,527		$656,981
TOTAL INDIRECT COSTS	$628,454			$28,527			$656,981
Contingency	$35,173	$119,530	$67,090		$10,398		$232,191
Construction Cost Subtotal	$387,100	$1,314,900	$737,500		$114,000		
CONSTRUCTION COST	$2,439,500			$114,000			$2,553,500
TOTAL INSTALLED EQUIPMENT COST							**$2,553,500**

Per the BACT/TBACT Workbook, the capital recovery factor (CFR) is determined using the following equation:

$$CRF = \frac{i\,(1+i)^n}{(1+i)^n - 1}$$

where i = interest rate and
n= lifetime of the abatement system

Per the BACT/TBACT Workbook, the interest rate is determined by using as a benchmark the interest on United States Treasury Securities with a maturity that closely approximates the project horizon. The interest rate is equal to the previous six month average of the benchmark interest rate plus two additional percentage points and rounded up to the next integer.

The abatement equipment is expected to last at least 10 years. Therefore, this period will be used to determine the capital recovery factor.

Per the United States Treasury Department[3] and following the BACT Workbook guidance to use the previous six month period average, the previous six month average of the 10-Year Treasury Note interest rate was approximately 2.7 percent for the period (January 2014 – July 2014). Therefore the CRF interest rate is 5 percent.

Using the equation above, the CRF is equal to 0.130.

Per the BACT/TBACT Workbook, the annualized cost is obtained using the following equation:

$$Annualized\ Cost = Installed\ Equipment\ Cost\ x\ [CRF + Tax + Insurance + G\&A + Annual\ O\&M]\ Factors$$

where:

CRF	= 0.130
Tax	= 0.01
Insurance	= 0.01
G & A	= 0.02
O&M	= 0.05

The annualized cost is therefore = $2,553,500 x [0.130 + 0.01 + 0.01 + 0.02 + 0.05] = $561,770

Per the BACT/TBACT Workbook, control technology is deemed cost effective if the annualized cost divided by the reductions in emissions is less than $17,500/per ton of POC reduced.

The storage tank is estimated to have a potential to emit of 3,622 pounds of POC per year. The control technology is required to have an abatement efficiency of least 98 percent. Therefore, the control technology is expected to reduce at least 3,589 pounds (or 1.79 tons) of POC per year.

The annualized cost per ton of POC reduced is estimated to be $313,838/ton POC reduced. This is greater than the BACT/TBACT Workbook cost effectiveness threshold of $17,500/ton of pollutant. Therefore, BACT 1 as listed in the workbook is not cost effective.

[3] United States Treasury Department website: http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2014, accessed July 10, 2014

4.5 Select BACT

As BACT 1 is not cost effective, the "achieved in practice" BACT 2 will be required for the new external floating roof. Per the BACT/TBACT Workbook, achieved in practice BACT is all of the following:

- a District approved roof with a liquid mounted primary seal and zero gap secondary seal,
- no ungasketed roof penetrations,
- no slotted pipe guide pole unless equipped with float and wiper seals,
- no adjustable roof legs unless fitted with vapor seal boots or equivalent, and
- a dome.

ENGINEERING EVALUATION
Plant 10: Chevron Products Company
Application 26698: Amendment to permit condition 8773 (typo correction)

BACKGROUND

Chevron Products Company (Chevron) has submitted this permit application to correct a typographical error in permit condition 8773 for the following source:

S-4155 Hot Oil Furnace (F-135)

Part 1 of permit condition 8773 states:

"The NOx emitted from S-4155 shall not exceed **8.85 lb/hour (averaged over any rolling 3-hour period)**. This NOx emissions limit shall not apply to S-4155 during the startup or shutdown period of S-4155. For S-4155, startup periods shall last no more than 36 hours after the first burner is lit. For S-4155, the shutdown period shall begin 12 hours before the last burner is extinguished. (cum inc)

The time of first burner lighting and last burner extinguishment shall be determined based on the NOx CEM data and/or continuous hourly fuel flow data of S-4155. The first NOx reading recorded by the properly operating CEM after S-4155 is cold started from zero fuel flow, will be considered the point at which startup has begun. The time of last burner extinguishment (the end of the shutdown period) will be considered the time when the fuel flow to S-4155 is zero.

The NOx mass rate shall be calculated as follows based on the concentration (ppm NOx, corrected to 3% O2, dry) as measured by the CEM and the firing rate (BTU/hr) based on the fuel gas meter for S-4155:
lb NOx/hour = [ppm NOx](1 lb-mole/386 scf)(46 lb NO2/lb-mole NO2)(**0.01077** dscf flue gas/BTU)[million BTU/hour]"

The scope of Application 26698 is to correct the (dscf flue gas/BTU) multiplier (from 0.01077 to 0.01017[4]) as discussed below. S-4155's hourly firing rate is 209 MMBTU/hr (5,016 ÷ 24). The multiplier cited above is used in the equation provided in part 1 of permit condition 8773 to demonstrate compliance with the NOx emission rate of 8.85 lb/hour (averaged over any rolling 3-hour period).

If for example, the NOx concentration corrected to 3% O_2 and firing rate for S-4155 averaged over any rolling 3-hour period are 40 ppm and 180 MMBTU/hour, respectively the NOx emission rates calculated using the existing (0.01077) and revised (0.01017) multipliers would be 9.24 lb/hour (over the limit) and 8.73 lb/hour (below the limit), respectively.

The proposed change to permit condition 8773 is administrative (correction of a typo error), and will not result in a "net increase" in NOx emissions from S-4155.

[4] 0.01017 = [(8,710) x (20.9 – 0/20.9 – 3)] ÷ 1,000,000; Where, F_d (natural gas) = 8,710 dscf/MMBTU

EMISSIONS CALCULATION
The proposed change to permit condition 8773 will not result in a "net increase" in NOx emissions from S-4155. Therefore, the cumulative increase in NOx emissions is zero.

BACT & OFFSETS:
The proposed change to permit condition 8773 is administrative in nature and will not require physical or operational changes to S-4155. Therefore, the cumulative increase in emissions is zero, BACT is not triggered and offsets are not required.

STATEMENT OF COMPLIANCE:
S-4155 is subject to and is expected to comply with Regulation 9, Rule 10 "Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries". The District's Compliance & Enforcement staff will verify the compliance of the above source with Regulation 9-10 during their routine inspections.

The proposed change to permit condition 8773 is categorically exempt from CEQA per Regulation 2-1-312.1. Chevron has submitted Appendix H "Environmental Information Form" in accordance with Regulation 2-1-312.

This project is over 1,000 feet from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PERMIT CONDITIONS:
The proposed changes to permit condition 8773 are as shown below:

For S-4155, Plant 10:

1. The NOx emitted from S-4155 shall not exceed 8.85 lb/hour (averaged over any rolling 3-hour period). This NOx emissions limit shall not apply to S-4155 during the startup or shutdown period of S-4155. For S-4155, startup periods shall last no more than 36 hours after the first burner is lit. For S-4155, the shutdown period shall begin 12 hours before the last burner is extinguished. (Basis: C~~c~~umulative I~~i~~ncrease)

   The time of first burner lighting and last burner extinguishment shall be determined based on the NOx CEM data and/or continuous hourly fuel flow data of S-4155. The first NOx reading recorded by the properly operating CEM after S-4155 is cold started from zero fuel flow, will be considered the point at which startup has begun. The time of last burner extinguishment (the end of the shutdown period) will be considered the time when the fuel flow to S-4155 is

zero.

The NOx mass rate shall be calculated as follows based on the concentration (ppm NOx, corrected to 3% O2, dry) as measured by the CEM and the firing rate (BTU/hr) based on the fuel gas meter for S-4155: lb NOx/hour = [ppm NOx](1 lb-mole/386 scf)(46 lb NO2/lb-mole NO2)(0.~~01077~~ 01017 dscf flue gas/BTU)[million BTU/hour]

2. The concentration of CO emitted from S-4155 shall not exceed 50 ppmv corrected to 3% O2, dry. Compliance with this CO limit shall be based on the average of three 30-minute test runs as specified in BAAQMD Source Test Procedure ST-6. (Basis: BACT)

3. S-4155 shall be equipped with a District-approved O2 monitor and a District-approved continuous NOx monitor. (Basis: Regulation 2-1-403)

4. To confirm compliance with the NOx and CO limits in conditions #1 and #2, respectively, and to verify the accuracy of the NOx monitor required by condition #3, the owner/operator of S-4155 shall conduct a source test within 60 days of start-up after the physical modification of the equipment. The District Source Test Manager shall approve the source test procedures as well as the installation and location of testing ports, instrumentation, and platforms. After the above approval is received, the owner/operator shall notify the District Permit Services Division and the District Source Test Manager at least two weeks prior to performing any source test. Source test results shall be submitted to the District Source Test Section and the Permit Services Division within 45 days of completing the test. (Basis: C~~c~~umulative I~~i~~ncrease, BACT)

5. The concentration of H2S in the fuel gas at S-4155 shall not exceed 50 ppm averaged over any 24-hour period. To confirm compliance with this condition, either S-4155 or the fuel gas mix drum supplying fuel gas to S-4155 shall be equipped with a continuous H2S monitor, and this information shall be made available for District inspection for a period of 24 months from the date on which a record is made. (Basis: BACT)

6. Fuel usage at S-4155 shall not exceed 209 MMBtu/hr on an annual average basis. To confirm compliance with this condition, records of fuel usage at S-4155 shall be recorded in a District-approved log, summarized on a monthly basis, and made available for District inspection for a period of 24 months from the date on which a record is made. (Basis: BACT)

RECOMMENDATION:

Modify permit condition 8773 as proposed and issue Chevron a Permit to Operate for the following source:

S-4155 Hot Oil Furnace (F-135)

_____

Bhagavan R. Krishnaswamy

ENGINEERING EVALUATION
Plant 10: Chevron Products Company
Application 26811: Amendments to NOx Box permit condition (curtailed operation)

BACKGROUND

Chevron Products Company (Chevron) has submitted this permit application requesting amendments to NOx Box permit condition 21232 as it pertains to the following sources:

S-4068 VGO Desulfurizer Furnace (F-1610)
127.5 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4069 VGO Furnace (F-1660)
55 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4154 Asphalt Solution Heater SDA Isomax (F-120)
50.5 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4158 Natural Gas Heater, H2 Plant (F-340)
48 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4188 Polymer Furnace (F-651)
27 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4189 Polymer Furnace (F-661)
15 MMBTU/hour; Not equipped with NOx and CO CEMS

Because the above sources are not equipped with CEMS, they are required by permit condition 21232 to operate within the confines of their respective NOx boxes to demonstrate compliance with Regulation 9-10-301 - the refinery-wide NOx emission limit of 0.033 lb NOx per MMBTU of heat input, based on an operating day average. The December 15, 2010 amendments to Regulation 9, Rule 10 "Inorganic Gaseous Pollutants – Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators, and Process Heaters in Petroleum Refineries" revised the definition of "Curtailed Operation" in Section 222 of the above rule to state: "Operation of a boiler, steam generator or process heater at no more than 30% (vs. 20%) of its rated heat input."

For reasons stated above, Chevron has requested the definition of curtailed operation in permit condition 21232 be changed in order to be consistent with the December 2010 amendments. The proposed change would reduce the frequency of compliance issues associated when operating sources "out of the NOx box" at low fire conditions, and also reduce affected sources from having to replicate low fire (curtailed operation) conditions during a source test to demonstrate if they exceeded their permitted NOx emissions rate (~factor) when operating "out of the NOx box".

The District believes the permit condition limit of 20% in permit condition 21232 that was created under a District policy can be more stringent than its rule; and that physical or operational changes are not required at S-4068, S-4069, S-4154, S-4158, S-4188, and S-4189 to accommodate the proposed change. Therefore, this evaluation report assumes

the proposed changes to permit condition 21232 will not result in a "net increase" in NOx emissions from the above sources.

EMISSIONS CALCULATION

This evaluation report assumes the proposed changes to permit condition 21232 will not result in a "net increase" in NOx emissions from S-4068, S-4069, S-4154, S-4158, S-4188, and S-4189. Therefore, the cumulative increase in NOx emissions is zero.

BACT & OFFSETS:

The proposed changes to permit condition 21232 will not require physical or operational changes to S-4068, S-4069, S-4154, S-4158, S-4188, and S-4189. Even if the above sources were to be modified, they would be exempt from BACT and offsets per Regulation 1-115, which states:

> **"1-115 Exemption, Modification to Meet Emission Standards:** When permits are necessary for modifying an existing source in order to comply with emission regulations such modifications shall not subject the existing source to emission standards for new or modified plants as set forth in Section 2-2-301 or 2-2-302 or 2-2-303 of Regulation 2, Permits."

In addition to the above, this evaluation report assumes the cumulative increase in emissions is zero. Therefore, BACT is not triggered, and offsets are not required.

STATEMENT OF COMPLIANCE:

S-4068, S-4069, S-4154, S-4158, S-4188, and S-4189 are subject to and are expected to comply with Regulation 9, Rule 10. The District's Compliance & Enforcement staff will verify the compliance of the above sources with the rule during their routine inspections.

The proposed change to permit condition 21232 is categorically exempt from CEQA per Regulation 2-1-312.1 and 312.3. Chevron has submitted Appendix H "Environmental Information Form" in accordance with Regulation 2-1-312.

This project is over 1,000 feet from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PERMIT CONDITIONS:

The proposed changes to permit condition 21232 are as shown below[5]:

5B) Part 5A. does not apply to low firing rate conditions (i.e., firing rate less than or equal to 20% of the unit's rated capacity) during startup or shutdown periods or periods of curtailed operation (ex. during heater idling, refractory dryout, etc.) lasting 5 days or less. During these conditions the means for determining compliance with the refinery wide limit shall be accomplished using the method described in 9-10-301.4.2 (previous 30-day average fire rate~~i.e. units out of service & 30-day averaging data~~). OR

[5] The proposed changes to permit condition 21232 are similar to changes made in Tesoro permit condition 18372 and Valero permit condition 21233.

Part 5A does not apply to units in Curtailed Operation (i.e. operation at 30% or less of rated heat input) or to units undergoing startup or shutdown, or to units that are temporarily out of service. For units in curtailed operation or undergoing startup or shutdown, the means for determining compliance with the refinery wide limit shall be in accordance with Regulation 9-10-301.4. For units temporarily out of service, the means for determining compliance with the refinery wide limit shall be in accordance with Regulation 9-10-301.5.

RECOMMENDATION:

Modify permit condition 21232 as proposed and issue a Permit to Operate for the following sources:

S-4068 VGO Desulfurizer Furnace (F-1610)
127.5 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4069 VGO Furnace (F-1660)
55 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4154 Asphalt Solution Heater SDA Isomax (F-120)
50.5 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4158 Natural Gas Heater, H2 Plant (F-340)
48 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4188 Polymer Furnace (F-651)
27 MMBTU/hour; Not equipped with NOx and CO CEMS

S-4189 Polymer Furnace (F-661)
15 MMBTU/hour; Not equipped with NOx and CO CEMS

_____
Bhagavan R. Krishnaswamy

ENGINEERING EVALUATION
Plant 10: Chevron Products Company
Application 27085: Amendment to NOx Box permit condition (expanding the box)

BACKGROUND

Chevron Products Company (Chevron) has submitted this permit application requesting amendments to NOx Box permit condition 21232 for the following source:

S-4188 Polymer Furnace (F-651)

S-4188 is not equipped with NOx CEMS and is therefore, required by permit condition 21232 to operate within the confines of its "NOx box" operating window to demonstrate compliance with Regulation 9-10-301 - the refinery-wide NOx emission limit of 0.033 lb NOx per MMBTU of heat input, based on an operating day average and its NOx emission factor of 0.25 lb/MMBTU.

Table 1 summarizes S-4188's NOx box operating window.

Table 1:	
MMBTU/hour	**%O2**
11.9	3.2
4.8	5.4
13.73	10.31
27	4.9
22.3	4

On December 19, 2013, S-4188 operated outside its NOx box operating window because the average daily firing rate and % O2 concentration were determined to be 10.2 MMBTU/hour and 10.7%, respectively. During such instances i.e., when deviating from the NOx box operating window, part 6 of permit condition 21232 requires Chevron to conduct a District approved source test that reasonably replicates past operation outside the established NOx box operating ranges.

Chevron conducted the District approved source test on June 13, 2014. The average firing rate and % O2 concentration determined during the June 2014 source test were 7.9 MMBTU/hour and 10.6%, respectively, and the NOx emission rate was found to be 0.148 lb/MMBTU. During such instances i.e., when the source tested NOx emission rate (0.148 lb/MMBTU) is less than the NOx emission factor for the source (0.25 lb/MMBTU), part 6 of permit condition 21232 allows Chevron to request the District to administratively amend the NOx box operating ranges based on the source test data. The scope of Chevron's request is summarized in the chart provided in Attachment 1.

The proposed amendments to part 5 of permit condition 21232 to include the June 2014 source test data points that would expand S-4188's NOx box operating window will not require physical or operational changes at the furnace. Therefore, this evaluation report assumes the proposed changes to permit condition 21232 will not result in a "net increase" in NOx emissions from S-4188.

EMISSIONS CALCULATION

This evaluation report assumes the proposed changes to permit condition 21232 will not result in a "net increase" in NOx emissions from S-4188. Therefore, the cumulative increase in NOx emissions is zero.

BACT & OFFSETS:

The proposed changes to permit condition 21232 will not require physical or operational changes to S-4188. Because this evaluation report assumes the cumulative increase in emissions is zero, BACT is not triggered and offsets are not required.

STATEMENT OF COMPLIANCE:

S-4188 is subject to and is expected to comply with Regulation 9, Rule 10 "Inorganic Gaseous Pollutants - Nitrogen Oxides and Carbon Monoxide from Boilers, Steam Generators and Process Heaters in Petroleum Refineries". The District's Compliance & Enforcement staff will verify the compliance of the above source with Regulation 9-10 during their routine inspections.

The proposed change to permit condition 21232 is categorically exempt from CEQA per Regulation 2-1-312.1. Chevron has submitted Appendix H "Environmental Information Form" in accordance with Regulation 2-1-312.

This project is over 1,000 feet from the nearest public school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

PERMIT CONDITIONS:

The proposed changes to permit condition 21232 are as shown below:

NOx Box Limits

> *5A. Except as provided in part 5B OR 5C & 5D, the owner/operator shall operate each source within the Nox Box ranges listed below at all times of operation, except for startup, shutdown, or curtailed operation, when the owner/operator may choose to comply with 5B OR 5C. This part shall not apply to any source that has a properly operated and properly installed NOx CEM. (9-10-502)
>
> NOx Box ranges
>
> Source No.: S-4154
> Emission Factor: 0.035 lb/MMBtu
> Firing rate MMBtu/h, HHV: O2%
> 18.9, 1.5
> 18.7, 4.6
> 7.9, 5.9
> 7.4, 5.2
> 7.3, 3.7
> 14, 1.3

Source No.: S-4158
Emission Factor: 0.035 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
29, 1.7
43.71, 1.73
45.31, 5.62
15, 4.6
17, 3.4
48.0, 3.28

Source No.: S-4188
Emission Factor: 0.25 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
11.9, 3.2
4.8, 5.4
7.9, 10.6
13.73, 10.31
27, 4.9
22.3, 4

Source No.: S-4189
Emission Factor: 0.25 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
3 @ 20% or 4.5 @ 30%, 25 (Note 1)
3 @ 20%, or 4.5 @ 30%, 0 (Note 1)
15, 0
15, 25

Source No.: S-4068
Emission Factor: 0.14 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
56.79, 3.7
65, 9.5
27, 9.5
23.5, 3.59

Source No: S-4069
Emission Factor: 0.045 lb/MMBtu
Firing rate MMBtu/h, HHV: O2%
14.10, 2.18
13.86, 8.17
26.16, 1.85
27.98, 6.52

S-4156 is not in service. The Limits listed above are based on a calendar day averaging period for both firing rate and

O2%.

Note 1: In accordance with Parts 3.B. or 3.C. of this permit condition, the oxygen limits do not apply to sources with maximum firing rate less than 25 MMBTU/hour. For the purposes of this permit condition, high fire is defined as 100% of the rated heat input, and low fire is defined as 20% (Part 3.B.) or 30% (Part 3.C.) of rated heat input.

RECOMMENDATION:

Modify permit condition 21232 as proposed and issue Chevron a Permit to Operate for the following source:

S-4188 Polymer Furnace (F-651)

_____

Bhagavan R. Krishnaswamy

ENGINEERING EVALUATION REPORT
Plant 10: Chevron Products Company
Application 24892: Emergency Standby Diesel Fire Water Pump Engines

BACKGROUND

Chevron Products Company (CPC) has applied to obtain an Authority to Construct and/or a Permit to Operate (PO) for the following equipment:

S-7541 Emergency Standby Diesel Fire Pump Engine
Caterpillar Model C18 DITA, Model Year: 2010
Engine Serial #: WRH02704, 1,105 in^3, 700 bhp, 5.36 MMBTU/hr

S-7542 Emergency Standby Diesel Fire Pump Engine
Caterpillar Model C18 DITA, Model Year: 2010
Engine Serial #: WRH02708, 1,105 in^3, 700 bhp, 5.36 MMBTU/hr

S-7541 and S-7542 are two identical emergency standby diesel engines that will provide motive power to two separate direct drive fire pumps which would supply water to CPC's fire protection system during an emergency/testing. S-7541 & S-7542 are Tier 3 CARB certified (Executive Order: U-R-001-0391) engines. Because the emission rate of diesel PM for S-7541 &S-7542 is less than or equal to 0.15 g/bhp-hr (certified at 0.112 g/bhp-hr[6]) the engines will be allowed to operate under the CARB ATCM for up to 50 hours/year for maintenance and testing purposes – provided they pass the District's Toxic Health Risk Screening Analysis (HRSA) which is discussed later in this report.

EMISSIONS SUMMARY

Table 1 summarizes the emissions from each of the above two identical engines.

Table 1:
Emissions from each diesel engine

Pollutant	CARB certified emission rates (in g/kw-hr)	Emission rates in g/bhp-hr	Emissions/engine		
			lbs/day	lbs/yr	TPY
NMHC + NOx	4.0	2.99	110.64	230.51	0.12
HC[7]	0.2	0.15	5.55	11.56	0.006
CO	2.4	1.79	66.24	138.00	0.069
NOx[8]	3.8	2.84	105.09	218.94	0.109

[6] The DEPM emission rate for S-7541 & S-7542 is certified under CARB EO U-R-001-0391 as 0.15 g/kw-hr (0.112 g/bhp-hr).
[7] HC (POC) is assumed to be 5% of NMHC + NOx
[8] NOx is assumed to be 95% of NMHC + NOx

PM	0.15	0.112	4.14	8.63	0.004

Note:
1. Maximum rated output/engine = 700 bhp
2. Daily emissions assume 24-hrs/day of operation (for BACT purposes).
3. Annual emissions assume 50 hours/year of operation for maintenance and testing purposes

If S-7541 and S-7542 consume ultralow sulfur diesel (15 ppm sulfur) at a rate of 38 gallons/hour and operate for 50 hours/year, annual SO_2 emissions from each of the above two engines are estimated as follows:
= (0.000015 lb S/lb fuel) x (7.31 lb fuel/gal fuel) x (38 gal fuel/hr) x (64 lb SO2/32 lb S) x (50 hr/yr)
= 0.42 lb/yr or 0.00021 TPY

The maximum daily SO_2 emissions from each of the above engines to verify if BACT is triggered is estimated as follows:
= (0.000015 lb S/lb fuel) x (7.31 lb fuel/gal fuel) x (38 gal fuel/hr) x (64 lb SO2/32 lb S) x (24 hr/day)
= 0.20 lb/day

CUMULATIVE INCREASE

Table 2 summarizes the cumulative increase in criteria pollutant emissions that will result from the operation of S-7541 and S-7542.

Table 2:
Cumulative increase in emissions

Pollutant	Emissions per engine (TPY)	Emissions from both engines (TPY)
NOx	0.109	0.218
POC	0.006	0.012
CO	0.069	0.138
PM_{10}	0.004	0.008
SO_2	0.00021	0.00042

TOXIC HEALTH RISK SCREENING ANALYSIS (HRSA)

It can be seen from Table 1 above that an HRSA is warranted because the annual emissions of diesel exhaust particulate matter estimated at 4.14 lbs/yr/engine is greater than the chronic trigger level of 0.34 lbs/yr for the above TAC in Table 2-5-1. S-7541 and S-7542 meet Best Available Control Technology for Toxics (TBACT) because the diesel exhaust particulate matter emission rate of 0.112 g/bhp-hr/engine is less than 0.15 g/bhp-hr. For engines that meet the above TBACT requirement, the engine is required to pass the toxic risk screening level of less than ten in a million.

Assuming 50 hours per year of non-emergency operation (testing and maintenance) per engine, staff in the District's Toxic Evaluation Section estimated the maximum incremental cancer risk and the chronic hazard index from S-7541 and S-7542 to be 1.2 in a million and 0.0008, respectively. In accordance with Regulation 2-5, the above risk levels were found to be acceptable.

BACT (BEST AVAILABLE CONTROL TECHNOLOGY)

Per Regulation 2-2-301, BACT is only triggered when emissions from a new source or an increase in emissions from a modified source has the potential to emit 10 lbs or more per highest day of emissions. In other words, BACT is a source and pollutant specific requirement. It can be seen from Table 1 above that S-7541 and S-7542 trigger BACT for CO (66.24 lbs/day/engine) and NOx (105.09 lbs/day/engine).

The District's BACT/TBACT Workbook (Document #: 96.1.3 dated 12/22/10) does not address direct-drive emergency standby fire pump engines such as S-7541 and S-7542. Instead the above BACT document addresses non-direct fire pump engines. In the absence of a District approved BACT determination and for the interim, it is proposed that BACT for direct-drive emergency standby fire pump engines S-7541 and S-7542 is compliance with the CARB Stationary Diesel ATCM. S-7541 and S-7542 comply with the proposed BACT standard because they are Tier 3 CARB certified (Executive Order: U-R-001-0391) engines.

Refer to the CARB Executive Order and the District's BACT Document # 96.1.3 attached with this evaluation report.

OFFSETS

With the exception of CO for which offsets are not required and because the facility-wide NOx and POC emissions at the refinery exceed 35 TPY for each of the above pollutants, CPC will have to offset the cumulative increase of 0.218 TPY of NOx and 0.012 of POC associated with S-7541 and S-7542 at a 1.15:1 ratio. In addition to the above and because the cumulative increase of PM_{10}, minus contemporaneous emission reduction credits, at the refinery are in excess of 1 TPY[9] since April 5, 1991, CPC will also have to offset the cumulative increase of 0.008 TPY of PM at 1:1 ratio.

In sum, CPC will have to provide the District ERCs for NOx (of 0.251 TPY), for POC (of 0.014 TPY), and for PM_{10} (of 0.008 TPY). CPC will offset the NOx increase of 0.251 TPY via ERC certificates 578, 901, and 1252; and the POC & PM_{10} increases of 0.014 TPY & 0.008 TPY, respectively, will be offset via ERC certificates 578 & 1252 as discussed below.

CPC surrendered ERC certificates 578 & 1252 to the District to offset emission increases associated with Application 24685. The remaining ERCs (0.144 tons of POC, 0.069 tons of NOx, and 0.562 tons of PM_{10}) will be used to offset emission increases associated with Application 24892. Because the NOx offsets required for Application 24892 is 0.251 tons, CPC will offset the remainder of 0.182 tons (0.251 – 0.069) via ERC certificate 901 per Regulation 2-2-302.2, which contains POC ERCs. In other words, CPC will be submitting 0.265 TPY of POC ERCs to offset the NOx (of 0.251 TPY) and POC (of 0.014 TPY) increase.

Lastly, though the increase in SO_2 should be offset, the District does not typically collect offsets for emissions less than three significant digits.

NSPS (NEW SOURCE PERFORMANCE STANDARDS)

40 CFR 60, Subpart IIII (NSPS IIII), Standards of Performance for Stationary Compression Ignition Internal Combustion Engines applies to stationary fire pump engines such as S-7541 and S-7542 that were manufactured as a certified National Fire Protection Association (NFPA) fire pump engine after July 1, 2006.

Per NSPS IIII the date that construction commences is the date the engine (S-7541 and S-7542) was ordered by the owner/operator (CPC). Per CPC' cover letter, the refinery had planned for these engines in early 2012. This evaluation report assumes CPC ordered S-7541 and S-7542 after July 1, 2006. NSPS IIII requires that if CPC commenced construction of the stationary CI engine (S-7541 and S-7542) after July 11th, 2005 and assuming the above engines were manufactured by Caterpillar after July 1st, 2006, that they be certified NFPA fire pump engines[10]. Caterpillar has listed the primary use of the

[9] Per info in the District's database, CPC did not offset 3.432 TPY of PM_{10} emissions associated with A#'s 9329 (0.18 TPY), 12842 (3.202 TPY), 18091 (0.006 TPY) and 24685 (0.044 TPY).

[10] NFPA does not certify fire pump engines. Instead, the NFPA sets forth specific guidelines on how the engine has to be constructed.

above engines for fire pumps[11]. However, it is not clear whether the above engines are certified NFPA fire pump engines.

Per §60.4202(d), beginning with the model years listed under Table 3 in NSPS IIII, stationary CI internal combustion engine manufacturers must certify their fire pump stationary CI ICE to the emission standards listed under Table 4 in NSPS IIII, for all pollutants, for the same model year and NFPA nameplate power. Following are the pertinent emission limits for S-7541 and S-7542 (700 HP 2009+ model year engine) listed under Table 4: NMHC + NOx: 4.0 g/kW-hr (3.0 g/HP-hr) and PM: 0.20 g/kW-hr (0.15 g/HP-hr)

Per §60.4205(c), owners and operators of fire pump engines with a displacement of less than 30 liters per cylinder must comply with the above emission standards. S-7541 and S-7542 are each equipped with 6 cylinders and have a total displacement of 18 liters i.e., 3 liters/cylinder/engine[12]. The emission rates for the above pollutants measured by CARB staff during the tests to certify S-7541 and S-7542 under CARB Executive Order U-R-001-0391 were found to be at/lower than the emission standards listed under Table 4 in NSPS IIII. Specifically, NMHC + NOx and PM were certified by CARB to be 4.0 g/kW-hr (2.99 g/HP-hr) and 0.15 g/kW-hr (0.112 g/HP-hr), respectively. Therefore, S-7541 and S-7542 are expected to comply with the emission standards in Table 4 of NSPS IIII.

Per §60.4211(c), the owner or operator of a CI fire pump engine that is manufactured during or after the model year that applies to their fire pump engine power rating listed under Table 3 in NSPS IIII must comply with the emission standards specified in §60.4205(c). To be in compliance, the owner/operator must purchase an engine certified to the emission standards in §60.4205(c) for the same model year and maximum (or in the case of fire pumps, NFPA nameplate) engine power. The engine must be installed and configured by the owner/operator according to the manufacturer's specifications.

As previously discussed, S-7541 and S-7542 are Tier 3 CARB certified engines with a maximum engine power of 700 HP per engine. Table 3 below compares the Tier 3 CARB certified emission rates to the emission standards in NSPS IIII.

Table 3		
Pollutant	CARB Emission standards g/kW-hr (g/hp-hr)	NSPS IIII Emission standards g/kW-hr (g/bhp-hr)
NMHC + NOx	4.0 (2.99)	4.0 (3.0)
HC[13]	0.20 (0.15)	0.20 (0.15)

[11] Per December 21, 2012 e-mail from Darren Dembski with Peterson Power Systems.
[12] Per December 21, 2012 e-mail from Darren Dembski with Peterson Power Systems.
[13] HC (POC) is assumed to be 5% of NMHC + NOx

NOx[14]	3.80 (2.84)	3.80 (2.85)
PM	0.15 (0.112)	0.20 (0.15)
CO	2.40 (1.79)	None

It can be seen from Table 3 that S-7541 and S-7542 comply with the applicable emission standards in NSPS IIII.

NESHAP (NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS)

S-7541 and S-7542 are subject to 40 CFR 63, Subpart ZZZZ (MACT ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines. CPC is a major source under MACT ZZZZ. Because the engines will be constructed on/after December 19, 2002, S-7541 and S-7542 are new stationary RICE' located at a major source.

§63.6590(b)(1)(i) states:
"(b) *Stationary RICE subject to limited requirements.*
(1) An affected source which meets either of the criteria in paragraphs (b)(1)(i) through (ii) of this section does not have to meet the requirements of this subpart and of subpart A of this part except for the initial notification requirements of § 63.6645(f).
(i) The stationary RICE is a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.
(ii) The stationary RICE is a new or reconstructed limited use stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions."

§63.6590(b)(1)(i) defines an emergency stationary RICE as follows:
"Emergency stationary RICE means any stationary internal combustion engine whose operation is limited to emergency situations and required testing and maintenance. Examples include stationary RICE used to produce power for critical networks or equipment (including power supplied to portions of a facility) when electric power from the local utility (or the normal power source, if the facility runs on its own power production) is interrupted, or stationary RICE used to pump water in the case of fire or flood, *etc.* Stationary RICE used for peak shaving are not considered emergency stationary RICE. Stationary RICE used to supply power to an electric grid or that supply nonemergency power as part of a financial arrangement with another entity are not considered to be emergency engines, except as permitted under § 63.6640(f). All emergency stationary RICE must comply with the requirements specified in § 63.6640(f) in order to be considered emergency stationary RICE. If the engine does not comply with the requirements specified in § 63.6640(f), then it is not considered to be an emergency stationary RICE under this subpart."

[14] NOx is assumed to be 95% of NMHC + NOx

§63.6640(f)(1) states:
"(f) *Requirements for emergency stationary RICE.*
(1) If you own or operate an existing emergency stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions, a new or reconstructed emergency stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions that was installed on or after June 12, 2006, or an existing emergency stationary RICE located at an area source of HAP emissions, you must operate the emergency stationary RICE according to the requirements in paragraphs (f)(1)(i) through (iii) of this section. Any operation other than emergency operation, maintenance and testing, and operation in non-emergency situations for 50 hours per year, as described in paragraphs (f)(1)(i) through (iii) of this section, is prohibited. If you do not operate the engine according to the requirements in paragraphs (f)(1)(i) through (iii) of this section, the engine will not be considered an emergency engine under this subpart and will need to meet all requirements for non-emergency engines.
(i) There is no time limit on the use of emergency stationary RICE in emergency situations.
(ii) You may operate your emergency stationary RICE for the purpose of maintenance checks and readiness testing, provided that the tests are recommended by Federal, State or local government, the manufacturer, the vendor, or the insurance company associated with the engine. Maintenance checks and readiness testing of such units is limited to 100 hours per year. The owner or operator may petition the Administrator for approval of additional hours to be used for maintenance checks and readiness testing, but a petition is not required if the owner or operator maintains records indicating that Federal, State, or local standards require maintenance and testing of emergency RICE beyond 100 hours per year.
(iii) You may operate your emergency stationary RICE up to 50 hours per year in non-emergency situations, but those 50 hours are counted towards the 100 hours per year provided for maintenance and testing. The 50 hours per year for non-emergency situations cannot be used for peak shaving or to generate income for a facility to supply power to an electric grid or otherwise supply power as part of a financial arrangement with another entity; except that owners and operators may operate the emergency engine for a maximum of 15 hours per year as part of a demand response program if the regional transmission organization or equivalent balancing authority and transmission operator has determined there are emergency conditions that could lead to a potential electrical blackout, such as unusually low frequency, equipment overload, capacity or energy deficiency, or unacceptable voltage level. The engine may not be operated for more than 30 minutes prior to the time when the emergency condition is expected to occur, and the engine operation must be terminated immediately after the facility is notified that the emergency condition is no longer imminent. The 15 hours per year of demand response operation are counted as part of the 50 hours of operation per year provided for non-emergency situations. The supply of emergency power to another entity or entities pursuant to financial arrangement is not limited by this paragraph (f)(1)(iii), as long as the power provided by the financial arrangement is limited to emergency power."

It can be seen that S-7541 and S-7542 are subject to the initial notification requirements of § 63.6645(f), which states:

"(a) You must submit all of the notifications in §§ 63.7(b) and (c), 63.8(e), (f)(4) and (f)(6), 63.9(b) through (e), and (g) and (h) that apply to you by the dates specified if you own or operate any of the following;

(1) An existing stationary RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP emissions.

(2) An existing stationary RICE located at an area source of HAP emissions.

(3) A stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions.

(4) A new or reconstructed 4SLB stationary RICE with a site rating of greater than or equal to 250 HP located at a major source of HAP emissions.

(5) This requirement does not apply if you own or operate an existing stationary RICE less than 100 HP, an existing stationary emergency RICE, or an existing stationary RICE that is not subject to any numerical emission standards.

(b) As specified in § 63.9(b)(2), if you start up your stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions before the effective date of this subpart, you must submit an Initial Notification not later than December 13, 2004.

(c) If you start up your new or reconstructed stationary RICE with a site rating of more than 500 brake HP located at a major source of HAP emissions on or after August 16, 2004, you must submit an Initial Notification not later than 120 days after you become subject to this subpart.

(d) As specified in § 63.9(b)(2), if you start up your stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions before the effective date of this subpart and you are required to submit an initial notification, you must submit an Initial Notification not later than July 16, 2008.

(e) If you start up your new or reconstructed stationary RICE with a site rating of equal to or less than 500 brake HP located at a major source of HAP emissions on or after March 18, 2008 and you are required to submit an initial notification, you must submit an Initial Notification not later than 120 days after you become subject to this subpart.

(f) If you are required to submit an Initial Notification but are otherwise not affected by the requirements of this subpart, in accordance with § 63.6590(b), your notification should include the information in § 63.9(b)(2)(i) through (v), and a statement that your stationary RICE has no additional requirements and explain the basis of the exclusion (for example, that it operates exclusively as an emergency stationary RICE if it has a site rating of more than 500 brake HP located at a major source of HAP emissions).

(g) If you are required to conduct a performance test, you must submit a Notification of Intent to conduct a performance test at least 60 days before the performance test is scheduled to begin as required in § 63.7(b)(1).

(h) If you are required to conduct a performance test or other initial compliance demonstration as specified in Tables 4 and 5 to this subpart, you must submit a Notification of Compliance Status according to § 63.9(h)(2)(ii).

(1) For each initial compliance demonstration required in Table 5 to this subpart that does not include a performance test, you must submit the Notification of Compliance Status

before the close of business on the 30th day following the completion of the initial compliance demonstration.
(2) For each initial compliance demonstration required in Table 5 to this subpart that includes a performance test conducted according to the requirements in Table 3 to this subpart, you must submit the Notification of Compliance Status, including the performance test results, before the close of business on the 60th day following the completion of the performance test according to § 63.10(d)(2)."

CALIFORNIA AIR RESOURCES BOARD (CARB) STATIONARY DIESEL ENGINE ATCM

The May 19, 2011 amendments to the CARB's Airborne Toxic Control Measure (ATCM) harmonized the emission standards and certification requirements for new stationary emergency standby direct-drive fire pump engines greater than 50 BHP with the federal New Source Performance Standards for Stationary CI Internal Combustion Engines (per 40 CFR § 60.4202 (d)). The emission limits for PM, NMHC+NOx, and CO summarized under Table 2 of the ATCM under § 93115.6(a)(4) are similar to emission limits for the above pollutants in Table 4 of NSPS IIII.

Table 4 below summarizes the emission limits for PM, NMHC+NOx, and CO found in the above rules for S-7541 and S-7542 i.e., 600 ≤.HP ≤ 750 (450 ≤ kW ≤ 560) pertaining to 2009+ model year fire pump engines.

Table 4		
Pollutant	Emission standards in Table 2 of ATCM g/kW-hr (g/bhp-hr)	Emission standards in Table 4 of NSPS IIII g/kW-hr (g/hp-hr)
NMHC + NOx	4.0 (3.0)	4.0 (3.0)
PM	0.20 (0.15)	0.20 (0.15)
CO	3.5 (2.6)	None

40 CFR § 60.4202 (d) requires manufacturers beginning with the model years summarized under Table 5 below to certify their stationary fire pump CI engines to the applicable emission standards in Table 2 of the ATCM.

Table 5	
NSPS IIII Certification Requirements For Stationary Fire Pump Engines	
Engine Power	Starting Model Year
kW < 75 (hp < 100)	2011

75 ≤ kW <130 (100 ≤ hp < 175)	2010
130 ≤ kW ≤ 560 (175 ≤ hp ≤ 750)	2009
kW >560 (hp > 750)	2008

S-7541 and S-7542 are Tier 3 CARB certified (Executive Order: U-R-001-0391) 2010 model year engines with a maximum engine power of 700 HP. Caterpillar has listed the primary use of the above engines for fire pumps. However, it is not clear whether the above engines are certified NFPA fire pump engines. Based on information summarized in Table 4 above and for the purposes of this evaluation report it can be seen that S-7541 and S-7542 comply with the applicable emission standards in CARB's ATCM.

STATEMENT OF COMPLIANCE

The May 19, 2011 amendments to CARB's ATCM states that engines (such as S-7541 and S-7542) cannot operate more than the number of hours necessary to comply with the testing requirements of the National Fire Protection Association (NFPA) 25 - "Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems," 2002 edition. NFPA guidelines require that S-7541 and S-7542 be operated for 30 minutes per week for 52 weeks in a year (26 hours/year). Since the diesel PM emission rates for S-7541 &S-7542 are less than or equal to 0.15 g/bhp-hr (certified at 0.112 g/bhp-hr) and because the engines passed the District's HRSA, they will be permitted to operate for up to 50 hours/year/engine for maintenance and testing purposes as allowed under the CARB's ATCM.

Because S-7541 and S-7542 are emergency standby diesel fire pump engines, they are not subject to the emission rate limits in Regulation 9, Rule 8. Specifically, S-7541 and S-7542 are exempt from the requirements of Sections 9-8-301 through 305, 501 and 503 per Regulation 9-8-110.5. However, S-7541 and S-7542 are subject to and are expected to comply with 9-8-330.3 because their non-emergency hours of operation will be limited by permit conditions discussed later in this evaluation report to 50 hours per year per engine. The monitoring and record keeping requirements of Regulation 9-8-530 are also incorporated into the permit conditions.

S-7541 and S-7542 are subject to and are expected to comply with the SO_2 limitations of 9-1-301 and 9-1-304. Specifically, per Section 501 of Regulation 9, Rule 1, area monitoring to demonstrate compliance with the ground level SO_2 concentration requirements in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours of Regulation 9-1-301 is at the APCO's discretion. Because S-7541 and S-7542 will not emit large quantities of SO_2 emissions (estimated at 0.00042 TPY under Table 2) it is unlikely that the APCO will require CPC to conduct ground level monitoring. Regulation 9-1-304 limits the sulfur content in liquid fuel burnt at S-7541 and S-7542 to not exceed 0.5% by weight. S-7541 and S-7542 will comply with the above requirement because they will burn California Low Sulfur diesel fuel which has 0.0015% by weight sulfur.

Like all combustion sources, S-7541 and S-7542 are subject to Regulation 6, Rule 1. Regulation 6-1-303.1 limits opacity from internal combustion engines of less than 25 liters (1500 in^3) displacement, or from any engine used solely as a standby source of motive power to Ringelmann 2. S-7541 and S-7542 will be solely used as standby sources of motive power and are therefore, not expected to produce visible emissions or result in fallout that would have opacities in excess of 40%. S-7541 and S-7542 compliance with the above opacity limit will be confirmed by the District's Compliance & Enforcement staff during their routine inspections.

This application is considered to be ministerial under the District's Regulation 2-1-311 and is therefore not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.3.
S-7541 and S-7542 will be located greater than 1,000 feet from the nearest K-12 school and are therefore not subject to the public notification requirements of Regulation 2-1-412.

The operation of S-7541 and S-7542 does not trigger a PSD review.

PERMIT CONDITIONS

CONDITION 22850 ----------

1. Operating for reliability-related activities is limited to 50 hours per year per engine. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]

2. The owner or operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating hours while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited.
[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(G)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has

been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.

a. Hours of operation for reliability-related activities (maintenance and testing).
b. Hours of operation for emission testing to show compliance with emission limits.
c. Hours of operation (emergency).
d. For each emergency, the nature of the emergency condition.
e. Fuel usage for each engine(s).

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I), (or Regulation 2-6-501)]

5. At School and Near-School Operation: If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

The owner or operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:

a. Whenever there is a school sponsored activity (if the engine is located on school grounds).

b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(1)] or (e)(2)(B)(2)]

End of Conditions

RECOMMENDATION

Waive the Authority to Construct and issue Permit's to Operate to the Chevron Products Company for the following equipment:

S-7541 Emergency Standby Diesel Fire Pump Engine
Caterpillar Model C18 DITA, Model Year: 2010
Engine Serial #: WRH02704, 1,105 in^3, 700 bhp, 5.36 MMBTU/hr
Tier 3 CARB certified under Executive Order U-R-001-0391

S-7542 Emergency Standby Diesel Fire Pump Engine
Caterpillar Model C18 DITA, Model Year: 2010

Engine Serial #: WRH02708, 1,105 in^3, 700 bhp, 5.36 MMBTU/hr

Tier 3 CARB certified under Executive Order U-R-001-0391

_____

Bhagavan R. Krishnaswamy

ENGINEERING EVALUATION
Plant 10: Chevron Products Company
Application 25793: Sulfur loading rack

BACKGROUND

Chevron Products Company (Chevron) has submitted this application to obtain an Authority to Construct (ATC) and/or Permit to Operate (PTO) for the following equipment, which is described as follows:

S-4490: Sulfur Loading Truck Rack
Material loaded: Molten sulfur
Pumps: 1 active/1 spare; each rated at 340 gallons/minute
Throughput: 157 long tons (LT)/hour; 593 LT/day; 216,330 LT/year

Abated by:

A-310: Water Scrubber in series with Caustic Scrubber of Packed Bed Design

S-4490 was issued an ATC on September 19, 2008 under Application 12842 (Renewal Project). Because the existing sulfur loading truck rack (S-4396) had reached the end of its useful service life, Chevron had proposed to replace it with S-4490 under the Renewal Project. Litigation related to the Renewal Project Environmental Impact Report (EIR) forced Renewal Project construction to cease in 2009. Therefore, S-4490 was never built. The EIR for the Renewal Project (currently referred to as the Modernization Project) is being reviewed by the City of Richmond and is pending their approval. Though S-4396 has sufficient capacity for current and post-Modernization Project sulfur production it needs to be replaced with S-4490 to bring it up to current safety and design standards.

EMISSIONS

Molten sulfur stored in two existing storage tanks (S-3141 and S-3226) will be conveyed to the new truck loading rack (S-4490) via the active transfer pump. The capacity of the transfer pump at S-4490 (340 GPM) will be higher than its predecessor (250 GPM) at the existing truck loading rack (S-4396). Therefore, it would take less time (11 minutes vs. 15 minutes) to load a truck at S-4490. The current Title V daily (593 LT[15]/day) and annual molten (216,330 LT/year) sulfur throughput limits applicable for S-4396 will continue to limit S-4490' throughput to ensure there is no emissions increase of hydrogen sulfide (H_2S), sulfur dioxide (SO_2), and particulate matter (PM) at S-4490 from existing levels.

The new scrubber system (A-310) will take suction via a 400 SCFM gas blower from the truck loading dome that is attached to each truck. The suction will induce a slight vacuum on the truck to pull the air/vapor mixture from the loading dome seal that is displaced during the loading operation. The air/vapor mixture will be abated by a water scrubber and caustic scrubber (A-310) before discharging to the atmosphere. As proposed, the

[15] 1 long ton = 2,240 pounds (1.12 short tons)

existing water scrubber (A-43) and caustic scrubber (A-44) that currently abate S-4396 and the two molten sulfur storage tanks (S-3141 and S-3226), will only abate the tank emissions after A-310 is installed. The above arrangement would reduce the vapor load at A-43 and A-44.

Attachment 1 contains a process drawing of the proposed setup, and the detailed emission calculations. Table 1 below summarizes abated emission estimates from S-4490.

Table 1: Emissions from the new sulfur loading rack				
Pollutant	**Lbs/hour**	**Lbs/day**	**Lbs/year**	**Tons/year**
H_2S	0.025	0.092	34	0.02
SO_2	0.007	0.026	10	0.01
PM	0.006	0.021	8	0.004

TOXIC RISK SCREEN ANALYSIS

The toxic air contaminant (TAC) that can be emitted from S-4490 is H_2S. The hourly (0.025 lbs/hour) and annual (34 lbs/year) emissions of H_2S estimated from S-4490 are below the acute (0.093 lbs/hour) and chronic (390 lbs/year) trigger levels for the above TAC in Table 2-5-1 in Regulation 2, Rule 5. Therefore, a HRSA is not required.

CUMULATIVE INCREASE

The cumulative increase in emissions of H_2S, SO_2, and PM are 0.02 TPY, 0.01 TPY, and 0.004 TPY, respectively.

BACT (BEST AVAILABLE CONTROL TECHNOLOGY)

Per Regulation 2-2-301, BACT is only triggered when emissions from a new source or modified source have the potential to emit 10 lbs or more per highest day. Chevron's proposed operation of S-4490 will result in 0.03 lb/day of SO_2 and 0.02 lb/day of PM, which are below the BACT threshold of 10 lb/day. Therefore, BACT is not triggered.

OFFSETS

The cumulative increase in emissions of 0.01 TPY (for SO_2) and 0.004 TPY (for PM) will be offset via ERC Certificate # 1167.

STATEMENT OF COMPLIANCE

S-4490 is subject to Regulation 6-1-301, 302, 305, 310, 311, and 330.

The District's enforcement staff will verify S-4490's compliance with Regulation 6-1-301, 302, and 305 during their routine plant inspections.

Reg. 6-1-310 limits filterable particulate (FP) emissions from any source to 0.15 grains per dry standard cubic foot (gr/dscf) of exhaust volume. This is a "grain loading" standard. The abated FP emissions that will exhaust out of A-310' stack via a 400 SCFM blower is 0.000093 lbs/minute (0.002 gr/dscf[16]). Therefore, S-4490 will comply with

[16] 0.002 gr/dscf = (0.000093 x 7,000) ÷ 400

Regulation 6-1-310.

Regulation 6-1-311 limits the emission rate of particulates from "general operations." The allowable emission rate (E, in lbs/hr) = 4.10 $P^{0.67}$, where P is the process weight rate of in tons/hr.
S-4490 can process up to 157 long tons/hour of molten sulfur (176 tons/hour). Substituting the above "P" value into the equation, the allowable emission rate E for S-4490 is equal to 131 lbs/hour. The abated PM emission rate from A-310 is estimated to be 0.006 lb/hour. Therefore, S-4490 will comply with Regulation 6-1-311.

S-4490 is subject to and is expected to comply with Regulation 9-1-301 and 302. The abated SO_2 emission from A-310 is estimated to be 0.007 lbs/hour, which is below the 300 ppm limit in Reg. 9-1-302.

S-4490 is subject to and is expected to comply with Regulation 9-2-301 because the abated H_2S emission from A-310 is estimated to be 0.025 lbs/hour.

The California Environmental Quality Act (CEQA):

Even though S-4490 is included in the Modernization Project, its installation can be justified independently from that project. Chevron has documented that the existing loading rack (S-4396) has reached the end of its useful service life. Though S-4396 has sufficient capacity for current and post-Modernization Project sulfur production it needs to be replaced with S-4490 to bring it up to current safety and design standards. The District is satisfied that Chevron has demonstrated the need for S-4490 to be installed regardless of whether any other element of the Modernization Project goes forward. Likewise, no other element of the Modernization Project depends upon replacement of the loading rack.

As it currently exists, the District's Permit Handbook does not contain a chapter that addresses sources such as S-4490. Therefore, this permit evaluation cannot be classified as ministerial. However, the CEQA categorical exemption provided in Regulation 2-1-312.11 applies. As required by Reg. 2-1-312, Chevron has submitted the Appendix H "Environmental Information Form".

The proposed project to install S-4490 can be reviewed under the following two categorical exemptions provided in CEQA guidelines:

CEQA Guidelines §15302(b) provides:

> Class 2 [exemption applies to] replacement or reconstruction of existing structures and facilities where the new structure will be located on the same site as the structure replaced and will have substantially the same purpose and capacity as the structure replaced, including but not limited to:

(b) Replacement of a commercial structure with a new structure of substantially the same size, purpose, and capacity.

CEQA Guidelines §15311 for Accessory Structures provides:

Class 11 (exemption) consists of construction, or replacement of minor structures accessory to (appurtenant to) existing commercial, industrial, or institutional facilities.

The "replacement or reconstruction" exemption applies because S-4490 will be used for the same purpose as its predecessor S-4396 and will be located adjacent to it. After S-4490 is installed and operating, S-4396 will be decommissioned and dismantled. Though not identical, the units are very close in form and function. It would not be reasonable to expect a modern loading rack to be identical to one designed and built more than 30 years ago. However, the District believes it is apparent that S-4490 is a modern equivalent to S-4396.

The "accessory structures" exemption applies because the loading rack is a relatively minor piece of the SRU operation. The loading rack consists of a platform and vapor recovery system for loading molten sulfur onto delivery trucks. The size and complexity of the loading rack is minor relative to the SRU processing operation that is services.

S-4490 is greater than 1,000 feet from the nearest K-12 school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

The proposed issuance of a PTO to S-4490 will not trigger a PSD review.

PERMIT CONDITIONS

Excerpt from Modernization Project proposed permit conditions:

S-4490 was previously reviewed as a new source under Application 12842, and was subject to parts 78, 79, and 110 (partial excerpt) of permit condition 24136, as shown below:

78. The Owner/Operator of Sulfur Loading Rack S-4490 shall abate this source by a properly maintained and properly operated A-310 Sulfur Loading Rack Caustic Scrubber at all times of operation of S-4490. The Owner/Operator of A-310 shall abate only S-4490 with A-310.
[Basis: Cumulative Increase, Rule 2-5]

a. The Owner/Operator of S-4490 shall install and maintain a safety interlock that prevents the operation of S-4490 without the A-310 scrubber properly operating in order to demonstrate compliance with Part 78.

79. The Owner/Operator of S-4490 Sulfur Loading Rack shall not exceed any of the following limits:

328,500 long tons during any consecutive 12-month period
900 long tons per calendar day.

[Basis: Cumulative Increase]

110. The Owner/Operator of all sources covered by this permit application (A/N 12842) shall maintain the following in a District-approved log and shall keep these records on site for a period of at least 5 years from date of entry and make the records available to District staff upon request (note the Hydrogen Plant Replacement Project is covered by similar conditions in parts 37 and 38). [Basis: Regulation 2-1-301, Recordkeeping]

In order to demonstrate compliance with part 78, the Owner/Operator of S-4490 shall maintain calendar day, monthly, and consecutive 12-month total sulfur loaded, in long tons, at the S-4490 Sulfur Loading Rack, Abated by A-310 Scrubber.

New permit conditions for this application:

The permit condition will be amended as shown below, and will be assigned a new permit condition number (# 25814).

1. The Owner/Operator of the new Sulfur Loading Rack S-4490 shall abate this source by a properly maintained and properly operated A-0310 Sulfur Loading Rack Water Scrubber in series with Caustic Scrubber of Packed Bed Design at all times of operation of S-4490. The Owner/Operator of A-310 shall abate only S-4490 with A-310.
   [Basis: Cumulative Increase, Rule 2-5]

   a. The Owner/Operator of S-4490 shall install and maintain a safety interlock that prevents the operation of S-4490 without the A-310 scrubber properly operating in order to demonstrate compliance with Part 1.
   b. The Owner/Operator of S-4490 shall ensure toxic air contaminant (TAC) emissions from the sulfur loading rack do not exceed any risk screening trigger levels for TACs listed in Table 2-5-1 of Regulation 2-5.

   [Basis: Cumulative Increase, Toxics]

2. The Owner/Operator of S-4490 Sulfur Loading Rack shall not exceed any of the following limits:

   216,330 long tons during any consecutive 12-month period
   593 long tons per calendar day.

   [Basis: Cumulative Increase]

3. In order to demonstrate compliance with Part 2, the Owner/Operator of S-4490 shall maintain records of calendar day, monthly, and consecutive 12-month total sulfur loaded, in long tons, at S-4490. The Owner/Operator shall keep these records in a District-approved log for a period of at least 5 years from date of entry and make the records available to District staff upon request.
   [Basis: Regulation 2-1-301, Recordkeeping]

4. The Owner/Operator shall not simultaneously operate S-4490 and the existing Sulfur Loading Rack (S-4396), which is abated by water scrubber (A-43) and caustic scrubber (A-44), for more than 90-days after S-4490 is started-up. When S-4396 is dismantled and removed from service, air emissions from molten sulfur storage tanks (S-3141 and S-3226) shall be abated at all times by A-43 and A-44. The Owner/Operator shall notify the District in writing of the date S-4396 was taken out of service.
   [Basis: Regulation 2-1-403, 2-2-410]

5. The Owner/Operator shall ensure the concentration of hydrogen sulfide from A-310 does not exceed 12 ppm. To demonstrate compliance with the hydrogen sulfide concentration limit and once every year, the Owner/Operator shall conduct a source test at S-4490 while operating it at maximum capacity when processing a saleable product.

   The requirement for testing "once every year" as used herein requires that the testing must commence annually during the period of time two weeks before or two weeks after the date on which the initial compliance testing was completed (the initial annual test date). If operating conditions at the Plant in subsequent years prevent the annual testing from being commenced during that window of time, the Owner/Operator shall notify the District and provide an explanation of the circumstances at the facility preventing the conduct of the annual testing. The District and the Owner/Operator will then agree upon an alternative time to commence the annual testing. Thereafter the agreed upon test date will become the new annual test date for setting the window for annual testing in future years until such time as circumstances require another adjustment to the annual test date.
   [Basis: Regulation 2-1-223.7, 2-1-301, Regulation 2-6-409.2]

6. Prior to conducting source tests required by this permit condition the Owner/Operator shall submit a source test protocol for approval to the District's Source Test Section. The Owner/Operator shall describe the test methods that will be used to determine the hydrogen sulfide concentration. The owner/operator shall describe the expected throughputs to the equipment during the source tests.
   [Basis: Regulation 2-1-301]

7. The owner/operator shall notify the Manager of the District's Source Test Section at least thirty (30) days prior to the test, to provide the District staff the option of observing the testing. Within 60 days of test completion, a comprehensive report

of the test results shall be submitted to the Manager of the District's Source Test Section for review and disposition. Records of the source test results and any related correspondence with the District's Source Test Section shall be retained on-site by the owner/operator for a minimum of 5 years from the date of the document, and shall be made available to the District upon request.
[Basis: Regulation 2-1-301, Regulation 2-6-503]

8. The frequency of source testing required under part 5 of this permit condition shall be reduced from annually to once every five years if three consecutive annual source tests document that the hydrogen sulfide concentration is less than 50 percent of the 12 ppm permit limit in Part 5. The frequency of source testing shall revert back to annually if any source test documents a hydrogen sulfide concentration 6 ppm or more. The source testing frequency can again be reduced to once every five years if another three consecutive annual source tests document that emissions of hydrogen sulfide are less than 6 ppm.
[Basis: Regulation 2-6-409.2]

RECOMMENDATION

Issue Chevron an ATC for the following new equipment:

S-4490: Sulfur Loading Truck Rack
Material loaded: Molten sulfur
Pumps: 1 active/1 spare; each rated at 340 gallons/minute
Throughput: 157 long tons (LT)/hour; 593 LT/day; 216,330 LT/year

Abated by:

A-310: Water Scrubber in series with Caustic Scrubber of Packed Bed Design

_____
Bhagavan R. Krishnaswamy

ENGINEERING EVALUATION
Plant 10: Chevron Products Company
Application 25960: H_2S scavenger tank

BACKGROUND

Chevron Products Company (Chevron) has submitted this application to obtain a Permit to Operate (PTO) for the following equipment, which is described as follows:

S-4375: 7,000 gallon horizontal fixed roof tank (chemical trailer container)
Tank location: Blending & Shipping (B&S) Area Business Unit
Material stored: NALCO EC5491A; TVP ≤ 1.4 psia
(60% by wt. proprietary amine; 5% by wt. alkyl amine oxide; and 5% by wt. IPA)
Maximum throughput: 180,000 gallons/year

S-4375 was issued a Temporary PTO on January 29th, 2014, which was valid until April 29th, 2014.

S-4375 will store NALCO EC5491A – a H_2S scavenging chemical that will be added to a pipeline carrying materials (gas oils, etc.) from the refinery to be loaded into marine vessels/barges at the wharf. The above chemical scavenges and eliminates H_2S in the vapor space of tanks & containers, and the headspace of the receiving vessel. The requirement to add the chemical is driven by one of Chevron's customers for safety reasons in order to ensure personnel are not exposed to H_2S during loading and unloading activities. Any off-gases from the loading operation will be abated by the thermal oxidizer at Chevron's wharf. When emptied, S-4375 will be shipped off Chevron's property to be filled offsite.

S-4375 does not qualify for any exemptions in Reg. 2-1 and will therefore require a permit. S-4375 will be collocated with S-4372, which was permitted under Application 21677 in May 2010. S-4372 also stores a different formulation of a H_2S scavenging chemical (NALCO EC9085A) and is subject to permit condition 24606. However, the H_2S scavenger stored in S-4372 does not meet Chevron's customer requirements. Chevron has confirmed that installing S-4375 will not result in an increase in the number of fugitive components, since S-4372 & S-4375 will share the same pump/fugitive components. Fugitive component related counts/emissions weren't taken into account when S-4372 was reviewed under Application 21677. Therefore, they are being accounted for under this application.

EMISSIONS

The US EPA TANKS 4.0.9d model cannot be used to estimate working (L_W) and breathing (L_S) loss POC emissions from S-4375 when storing proprietary materials such as NALCO EC5491A. Therefore, POC emissions from S-4375 were estimated via AP-42 formulae (highlighted in yellow) provided in Chapter 7.1 "Organic Liquid Storage Tanks". The typical and maximum POC emissions from S-4375 were estimated to be 110.14 lbs/year and 234.42 lbs/year, respectively.

Assumptions and variables used in the AP-42 equations are as shown below:

1. Tank dimensions: radius of 4 feet; liquid depth of 6 feet; and length of 20 feet; effective volume = 6,050 gallons (144 BBL).

2. Storage temp = 68ºF (528ºR); vapor MW = 31.06 lb/lb-mole; TVP = 1.4 psia; Typical throughput = 60,000 gal/year (1,429 BBL/year; 10 turnovers/year); Max throughput = 180,000 gal/year (4,287 BBL/year; 30 turnovers/year).

3. L_S = 48 lbs/year (AP-42 equation 1.4);
   Where K_E = 0.04 (AP-42 equation 1.6); D_E = 14.273 (AP-42 equation 1.13);
   Area = 160; H_{VO} = 3.142; K_S = 0.811; W_V = 0.008.

4. L_W (typical) = 62.14 lbs/year (AP-42 equation 1.29);
   Where M_V = 31.06; P_{VA} = 1.4; Q = 1,429; K_N = K_P = 1

5. L_W (max) = 186.42 lbs/year (AP-42 equation 1.29);
   Where M_V = 31.06; P_{VA} = 1.4; Q = 4,287; K_N = K_P = 1

6. L_T (typical) = 110 lbs/year (48 + 62.14) and L_T (max) = **234** lbs/year (48 + 186.42)
   (AP-42 equation 1.1)

The relevant pages from AP-42 Chapter 7.1 containing the equations referenced above are attached with this evaluation report.

The fugitive components that will handle materials stored in S-4375 (and S-4372) are:

- 9 valves – 5 ball, 1 metal bellow gate, and 3 needle valves
- 1 relief valve
- 1 pump
- 129 connectors
- 0 flanges – though it may seem odd there are no flanges, since each of the 9 valves would at least be equipped with 2 flanges/valve (total: 18), Chevron confirmed that the valves are held in place by screwed connections.

POC and TAC (IPA) emissions from the above fugitive components are estimated to be equal to **634** lbs/year and 32 lbs/year, respectively. Refer to Table's 1 and 2 of Attachment 1.

This report assumes combined POC (non-fugitive and fugitive) from S-4375 is equal to **868** lb/year (234 + 634).

TOXIC RISK SCREEN ANALYSIS

NALCO EC5491A is primarily composed of proprietary amines and contains IPA (5% by wt.). The combined IPA (non-fugitive and fugitive) from S-4375 is equal to 43

lbs/year (868 x 0.05). S-4375 will not be loaded on site. Because the highest emissions from storage tanks occur when they are loaded, it is reasonable to assume the acute and chronic TAC trigger levels for IPA in Table 2-5-1 of 7.1 lbs/hour and 270,000 lbs/year, respectively will not be exceeded. Therefore, a HRSA is not required.

CUMULATIVE INCREASE

Chevron's proposed operation of S-4375 will result in a cumulative increase of 0.43 TPY of POC.

BACT (BEST AVAILABLE CONTROL TECHNOLOGY)

Per Regulation 2-2-301, BACT is only triggered when emissions from a new source or modified source have the potential to emit 10 lbs or more per highest day. Chevron's proposed operation of S-4375 will result in 6.1 lbs of POC/highest day (non-fugitive: 0.90+ fugitive: 5.19) [17] , which is below the BACT threshold of 10 lb/day. Therefore, BACT is not triggered. Because emissions associated with fugitive components can be significant when considered collectively, the District has required large facilities such as Chevron to always install BACT compliant fugitive components. The proposed permit conditions discussed toward the end of this evaluation report outline the types of BACT compliant fugitive components that will have to be installed at S-4375.

OFFSETS

Because facility-wide POC emissions exceed 35 TPY, Chevron will have to offset the cumulative increase of 0.43 TPY of POC associated with operating S-4375 at a 1.15:1 ratio. The required offsets of 0.50 TPY of ERCs (1.15 x 0.43) be withdrawn from Certificate # 1393 which is currently in the District's possession.

STATEMENT OF COMPLIANCE

S-4375 is subject to and is expected to comply with Regulation 8 "Organic Compounds", Rule 5 "Storage of Organic Liquids". Specifically, the fixed roof tank is subject to Reg. 8-5-301 (control requirements for storage tanks), 307 (requirements for fixed roof tanks), 328 (tank degassing requirements), 331 (tank cleaning requirements), and 332 (sludge handling requirements). The District's Compliance and Enforcement staff will verify S-4375' compliance with the above sections during their routine inspections.

The fugitive components summarized in Table 1 of "Attachment 1" are subject to Sections 302, 303, 304, 305, 306, and 307 in Regulation 8 "Organic Compounds", Rule 18 "Equipment Leaks". Sections 302 and 304 require, among other things, that organic compound leaks not exceed 100 ppm for valves and connections, and Sections 303 and 305 require, among other things, that organic compound leaks not exceed 500 ppm for pump/compressor seals and PRDs. Reg. 8-18-306 limits the percentages of non-repairable equipment allowed, and Reg. 8-18-307 requires that leaking equipment not be used unless the leak discovered by the operator, is minimized within 24 hours and repaired within 7 days. Chevron will include fugitive components associated with S-4375

[17] Non-fugitive emissions → 0.90 lbs/day = 234 lbs/year ÷ 260 days/year;
Fugitive emissions → 5.19 lbs/day (from Table 1 in Attachment 1).

into its Leak Detection and Repair (LDAR) program to ensure they comply with the above requirements and the monitoring required by the permit condition.

40 CFR 60 Subpart Kb (NSPS Kb) "Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984" applies to storage vessels with storage capacities greater than 75 m^3 (19,800 gallons). S-4375 is a 7,000 gallon (27 m^3) chemical trailer container that is permanently attached to a truck. Therefore, S-4375 is not subject to NSPS Kb per 60.110 b (a) and (d)(3).

40 CFR 61, Subpart FF (BWON) "National Emission Standards for Benzene Waste Operations" applies to benzene waste streams. The chemical stored in S-4375 is primarily composed of proprietary amines and 5% by wt. IPA, and does not contain any benzene waste. Therefore, S-4375 is not subject to BWON.

Among other criteria, 63.641 in 40 CFR 63, Subpart CC (MACT CC) "National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries" defines storage vessels to have storage capacities greater than 40 m^3 (10,560 gallons) and does not include vessels permanently attached to motor vehicles. S-4375 is a 7,000 gallon (27 m^3) chemical trailer container that is permanently attached to a truck. Therefore, S-4375 is not subject to MACT CC per 63.641.

This application is considered to be ministerial under the District's Regulation 2-1-311 and therefore is not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 4 "Organic Liquid Storage Tank".

S-4375 is greater than 1,000 feet from the nearest K-12 school and therefore is not subject to the public notification requirements of Regulation 2-1-412.

The proposed issuance of a PTO to S-4375 will not trigger a PSD review.

PERMIT CONDITIONS

(PC 25785)

1. The owner/operator of S-4375 (one 7,000 gallon horizontal fixed roof tank; chemical trailer container) shall not exceed the following throughput limit during any consecutive twelve-month period: NALCO EC5491A (TVP ≤ 1.4 psia) - 180,000 Gallons
   (Basis: Cumulative Increase)

2. The owner/operator may store alternate liquid(s) other than the materials specified in Part 1 and/or usages in excess of those specified in Part 1,

provided that the owner/operator can demonstrate that all of the following are satisfied:

a. Total POC emissions (including fugitive component emissions) from S-4375 do not exceed 868 pounds in any consecutive twelve month period; and

b. The use of these materials does not increase toxic emissions above any risk screening trigger level of Table 2-5-1 in Regulation 2-5.

(Basis: Cumulative Increase; Toxics)

3. To determine compliance with the above parts, the owner/operator shall maintain the following records and provide all of the data necessary to evaluate compliance with the above parts, including the following information:

a. Quantities of each type of liquid stored at this source on a monthly basis.

b. If a material other than those specified in Part 1 is stored, POC/NPOC and toxic component contents of each material used; and mass emission calculations to demonstrate compliance with Part 2, on a monthly basis;

c. Monthly throughput and/or emission calculations shall be totaled for each consecutive twelve-month period.

All records shall be retained on-site for five years, from the date of entry, and made available for inspection by District staff upon request. These recordkeeping requirements shall not replace the recordkeeping requirements contained in any applicable District Regulations.

(Basis: Cumulative Increase; Toxics)

4. Not more than 30 days after the start-up of S-4375, the owner/operator shall provide the District's Engineering Division with a final count of fugitive components installed. The owner/operator has been permitted for an increase in the following fugitive components in liquid service: Valves: 9; Flanges: 0; Connectors: 129; Pumps: 1; PRV: 1

(Basis: Cumulative Increase, offsets, toxics risk screen)

5. If there is an increase in the total fugitive component emissions, the plant's cumulative emissions for the project shall be adjusted to reflect the difference between emissions based on predicted versus actual component counts. The owner/operator shall provide to the District all additional required offsets at an offset ratio of 1.15:1 no later than 14 days after submittal of the final POC fugitive count. If the actual component count is less than the predicted, the total will be adjusted accordingly and all emission offsets applied by the owner/operator in excess of the actual total fugitive emissions will be credited back to the owner/operator.

(Basis: offsets)

6. The owner/operator shall install valves, in light hydrocarbon service, that are of District approved BACT compliant technology (bellows valves, diaphragm valves, live loaded valves, or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
   (Basis: BACT, Regulation 8-18, toxics risk screen)

7. The owner/operator shall install flanges (if applicable) and connectors, in light hydrocarbon service, that are of District approved BACT compliant technology (graphitic gaskets or the equivalent) such that fugitive organic emissions shall not exceed 100 ppm.
   (Basis: BACT, Regulation 8-18, toxics risk screen)

8. The owner/operator shall install pump seals, in light hydrocarbon service, that are of District approved BACT compliant technology (double mechanical seals with barrier fluid or the equivalent) such that fugitive organic emissions shall not exceed 500 ppm.
   (Basis: BACT, Regulation 8-18, toxics risk screen)

9. The owner/operator shall ensure that each pressure relief valve installed in hydrocarbon service is vented back to the process, to the refinery fuel gas system, or to an abatement device with a capture and destruction efficiency of at least 98% by weight.
   (Basis: BACT, Regulation 8-28, toxics risk screen)

10. In accordance with the provisions of Regulation 8-18, the owner/operator shall integrate all new fugitive equipment in organic service installed as part of S-4375 into the facility fugitive equipment monitoring and repair program.
    (Basis: BACT, Regulation 8-18)

RECOMMENDATION

Waive the ATC and issue Chevron a PTO for the following new equipment:

S-4375: 7,000 gallon horizontal fixed roof tank (chemical trailer container)
Tank location: Blending & Shipping (B&S) Area Business Unit
Material stored: NALCO EC5491A; TVP $\leq$ 1.4 psia
(60% by wt. proprietary amine; 5% by wt. alkyl amine oxide; and 5% by wt. IPA)
Maximum throughput: 180,000 gallons/year

Bhagavan R. Krishnaswamy

ENGINEERING EVALUATION REPORT
Plant 10: Chevron Products Company
Application 26168: S-3234 (Emergency Standby Diesel Engine)

BACKGROUND

Chevron Products Company (Chevron) has applied to obtain an Authority to Construct (ATC) and/or Permit to Operate the following equipment:

S-3234 Emergency Standby Diesel Engine
Deutz AG engine; Model TCD 4.1 L4
Model Year: 2013; EPA Interim Tier 4/ALT NO_x
Engine family: DDZXL04.1013
CARB Executive Order: U-R-013-0447
4.1 L (250 in^3), 4-cylinder, 115 kW, 154 bhp

S-3234 will provide motive power to an emergency storm water pump. S-3234' diesel particulate matter (DPM) emission rate is certified by CARB at 0.01 g/kW-hr (0.008 g/bhp-hr). Because S-3234' DPM emission rate is less than 0.15 g/bhp-hr, the engine will be allowed to operate for up to 50 hours/year for maintenance and testing purposes – provided it passes the District's Toxic Health Risk Screening Analysis (HRSA) which is discussed later in this report. When installed, S-3234 will replace S-7518.

EMISSIONS SUMMARY

Table 1 summarizes S-3234's emissions.

Table 1:								
Pollutant	CARB EO U-R-013-0447 Exhaust Info				Emissions from non-emergency use			
	Standard		Certified					
	g/kW-hr	g/hp-hour	g/kW-hr	g/hp-hour	lb/hour	lb/day	lb/year	TPY
NMHC	0.19	0.14	0.15	0.11	0.038	0.91	1.90	0.001
NO_x	3.4	2.54	2.3	1.72	0.582	13.97	29.11	0.015
CO	5	3.73	0.2	0.15	0.051	1.22	2.53	0.001
PM	0.02	0.01	0.01	0.0075	0.003	0.06	0.13	0.0001
SO_2[18]			0.008	0.006	0.002	0.05	0.10	5.063E-05

Note:
Horsepower rating 154 hp

[18] S-3234' fuel usage rate is 7.52 gallons/hour. Assuming the engine exclusively combusts ULSD (15 ppm sulfur); the density of the fuel is 6.76 lb/gal; and that all sulfur in the diesel converts to SO_2; the SO_2 emission rate is 0.002 lbs/hour (7.52 x 15 x 6.76 x 64 ÷ 10E6 x 32). The SO_2 emission factor is 0.006 g/bhp-hr (0.002 x 454 ÷ 154), and 0.008 g/kW-hr (0.006 x 1.341).

Max. hours per Reg. 9-8-330.3	50	hours/year
Daily emissions calculation based on	24	hours/day

CUMULATIVE INCREASE

The cumulative increase in POC, NO_x, and CO emissions from S-3234 are 0.001 TPY, 0.015 TPY, and 0.001 TPY, respectively. Though there is a cumulative increase in PM and SO_2 emissions, they are very small and will therefore, not be counted toward the cumulative increase in emissions at the plant.

TOXIC HEALTH RISK SCREENING ANALYSIS (HRSA)

S-3234' annual diesel particulate matter (DPM) emissions of 0.13 lb/year is below the District's DPM chronic trigger level of 0.34 lbs/yr for the above toxic air contaminant (TAC) in Table 2-5-1. Therefore, a HRSA is not required.

BACT (BEST AVAILABLE CONTROL TECHNOLOGY)

Per Regulation 2-2-301, BACT is only triggered when emissions from a new source or modified source have the potential to emit 10 lbs or more per highest day. It can be seen from Table 1 above that S-3234 triggers BACT for NO_x (14 lbs/day).

BACT requirements for S-3234 are contained in the District's BACT/TBACT Workbook (Document #: 96.1.3 dated 12/22/10). The above document does not contain BACT 1 (Technologically Feasible/Cost Effective) requirements for sources such as S-3234. The more restrictive BACT 1 standard does not apply because it will not be cost-effective to abate S-3234' emissions due to its relatively low annual NO_x emissions. Because S-3234 will be used to mitigate emergencies and/or will be used for 50 hours/year or less for non-emergency operation, it will have to meet the less restrictive BACT 2 (Achieved in Practice) requirements summarized in Table 1 of the above BACT document.

Table 2 below summarizes S-3234' CARB certified emission rates and compares them to emission rates found in Table 1 of BACT Document #: 96.1.3.

Table 2:
Comparison of emission rates to check if S-3234 meets BACT

Pollutant	S-3234' CARB certified emission rates g/kW-hr (g/bhp-hr)	District's BACT 2 limits based on CARB ATCM emission rates g/kW-hr (g/bhp-hr)
NMHC + NOx	2.45 (1.83)	4.0 (3.0)
CO	0.20 (0.15)	5.0 (3.7)

Table 2: Comparison of emission rates to check if S-3234 meets BACT		
Pollutant	**S-3234' CARB certified emission rates g/kW-hr (g/bhp-hr)**	**District's BACT 2 limits based on CARB ATCM emission rates g/kW-hr (g/bhp-hr)**
PM	0.01 (0.0075)	0.20 (0.15)

It can be seen from Table 2 above that S-3234 meets the District's BACT 2 requirements.

OFFSETS

The cumulative increase in POC, NO_x, and CO emissions from S-3234 are 0.001 TPY, 0.015 TPY, and 0.001 TPY, respectively will be offset via ERC Certificate # 1167.

NSPS (NEW SOURCE PERFORMANCE STANDARDS)

40 CFR 60, Subpart IIII (NSPS IIII), Standards of Performance for Stationary Compression Ignition Internal Combustion Engines applies to non-fire pump engines such as S-3234 that were manufactured after April 1, 2006. Per §60.4202(a)(2), S-3234 is subject to the emissions standards in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants. Table 3 summarizes emission standards found in 40 CFR 89.112 (a) that apply to S-3234.

Table 3: Emission standards found in Table 1 of 40 CFR 89.112 75 ≤ kW ≤ 130						
Tier #	**Model Year**	**NOx g/kW-hr (g/bhp-hr)**	**HC g/kW-hr (g/bhp-hr)**	**NMHC + NOx g/kW-hr (g/bhp-hr)**	**CO g/kW-hr (g/bhp-hr)**	**PM g/kW-hr (g/bhp-hr)**
Tier 1	1997	9.2 (6.87)	-	-	-	-
Tier 2	2003	-	-	6.6 (4.93)	5.0 (3.73)	0.30 (0.22)
Tier 3	2007	-	-	4.0 (2.99)	5.0 (3.73)	0.30 (0.22)

It can be seen from Table 3 that the Tier 3 standards for 2007 model year are most stringent. S-3234' CARB certified emission rates summarized in Table 2 are below their Tier 3 2007 model year counterparts. Therefore, S-3234 complies with the emission standards in NSPS IIII.

40 CFR 89.113 (a) sets forth the following smoke emission standards for non-road CI engines:

- 20% during the acceleration mode;
- 15% during the lugging mode; and
- 50% during the peaks in either the acceleration or lugging modes.

The opacity standards in 40 CFR 89.113, it appears, apply to mobile (and not stationary) non-road CI engines. Therefore, S-3234 is not subject to the above standards. Instead, S-3234 is subject to the opacity standards in Regulation 6, Rule 1, which is discussed in the later sections of this report.

Per §60.4207(b), S-3234 is subject to the following diesel fuel requirements in 40 CFR 80.510(b):

- Sulfur content ≤ 15 ppm maximum
- Cetane index = 40 or maximum aromatic content of 35% by volume

Diesel fuel sold in California meet the above standards. Therefore, S-3234 complies with the diesel fuel requirements in NSPS IIII.

NESHAP (NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS)

S-3234 is subject to 40 CFR 63, Subpart ZZZZ (MACT ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines because the engine will be constructed (~installed) on/after June 12, 2006. Per §63.6590(c)(6), "new" sources such as S-3234 are required to meet the requirements in MACT ZZZZ by meeting the requirements in NSPS IIII. As previously discussed, S-3234 complies with NSPS IIII and therefore, complies with MACT ZZZZ as well.

CALIFORNIA AIR RESOURCES BOARD (CARB) STATIONARY DIESEL ENGINE ATCM

The May 19, 2011 amendments to the CARB's Airborne Toxic Control Measure (ATCM) harmonized the emission standards and certification requirements for new stationary emergency standby diesel engines greater than 50 BHP with the federal New Source Performance Standards for Stationary CI Internal Combustion Engines contained in 40 CFR § 60.4202. S-3234 is a CARB certified diesel engine. Table 4 compares S-3234' CARB certified emission rates to the applicable emission standards contained in Table 1 of the ATCM for 2008+ model year engines.

Table 4:
Comparison of emission rates
CARB E.O. vs. ATCM
100 ≤ HP < 175
(75 ≤ kW < 130)

Pollutant	S-3234's CARB certified emission rates g/bhp-hr (g/kW-hr)	CARB ATCM emission rates g/bhp-hr (g/kW-hr)
NMHC + NOx	2.45 (1.83)	3.0 (4.0)
CO	0.20 (0.15)	3.7 (5.0)
PM	0.01 (0.0075)	0.15 (0.20)

It can be seen from Table 4 that S-3234 complies with the applicable emission standards in CARB's ATCM.

STATEMENT OF COMPLIANCE

S-3234 is an emergency standby diesel engine. Therefore, it is not subject to the emission rate limits in Regulation 9, Rule 8. Specifically, S-3234 is exempt from the requirements of Sections 9-8-301 through 305, 501 and 503 per Regulation 9-8-110.5. S-3234 is subject to and is expected to comply with 9-8-330.3 because its non-emergency hours of operation will be limited by permit conditions discussed later in this evaluation report to 50 hours per year. The monitoring and record keeping requirements of Regulation 9-8-530 are also incorporated into the permit conditions.

S-3234 is subject to and is expected to comply with the SO_2 limitations of 9-1-301 and 9-1-304. Specifically, per Section 501 of Regulation 9, Rule 1, area monitoring to demonstrate compliance with the ground level SO_2 concentration requirements in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours of Regulation 9-1-301 is at the APCO's discretion. Because S-3234 will not emit large quantities of SO_2 emissions (estimated at 0.00005 TPY; refer to Table 1) it is unlikely that the APCO will require Chevron to conduct ground level monitoring. Regulation 9-1-304 limits the sulfur content in liquid fuel burnt at S-3234 to not exceed 0.5% by weight. S-3234 will comply with the above requirement because it will burn California Low Sulfur diesel fuel which has 0.0015% by weight sulfur.

Like all combustion sources, S-3234 is subject to Regulation 6, Rule 1. Regulation 6-1-303.1 limits opacity from internal combustion engines of less than 25 liters (1500 in^3) displacement, or from any engine used solely as a standby source of motive power to Ringelmann 2. S-3234 will be solely used as a standby source of motive power and is therefore, not expected to produce visible emissions or result in fallout that would have opacities in excess of 40%. S-3234's compliance with the above opacity limit will be confirmed by the District's Compliance & Enforcement staff during their routine inspections.

This application is considered to be ministerial under the District's Regulation 2-1-311 and is therefore not subject to CEQA review. The engineering review for this project requires only the application of standard permit conditions and standard emission factors in accordance with Permit Handbook Chapter 2.3.
S-3234 will be located greater than 1,000 feet from the nearest K-12 school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

The operation of S-3234 will not trigger a PSD review.

PERMIT CONDITIONS

CONDITION 22850

1. Operating for reliability-related activities is limited to 50 hours per year per engine. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]

2. The owner or operator shall operate each emergency standby engine only for the following purposes: to mitigate emergency conditions, for emission testing to demonstrate compliance with a District, state or Federal emission limit, or for reliability-related activities (maintenance and other testing, but excluding emission testing). Operating hours while mitigating emergency conditions or while emission testing to show compliance with District, state or Federal emission limits is not limited.
[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(3) or (e)(2)(B)(3)]

3. The owner/operator shall operate each emergency standby engine only when a non-resettable totalizing meter (with a minimum display capability of 9,999 hours) that measures the hours of operation for the engine is installed, operated and properly maintained. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(G)(1)]

4. Records: The owner/operator shall maintain the following monthly records in a District-approved log for at least 36 months from the date of entry (60 months if the facility has been issued a Title V Major Facility Review Permit or a Synthetic Minor Operating Permit). Log entries shall be retained on-site, either at a central location or at the engine's location, and made immediately available to the District staff upon request.

a. Hours of operation for reliability-related activities (maintenance and testing).
b. Hours of operation for emission testing to show compliance with emission limits.
c. Hours of operation (emergency).
d. For each emergency, the nature of the emergency condition.
e. Fuel usage for each engine(s).

[Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(4)(I), (or Regulation 2-6-501)]

5. At School and Near-School Operation: If the emergency standby engine is located on school grounds or within 500 feet of any school grounds, the following requirements shall apply:

The owner or operator shall not operate each stationary emergency standby diesel-fueled engine for non-emergency use, including maintenance and testing, during the following periods:
a. Whenever there is a school sponsored activity (if the engine is located on school grounds).
b. Between 7:30 a.m. and 3:30 p.m. on days when school is in session "School" or "School Grounds" means any public or private school used for the purposes of the education of more than 12 children in kindergarten or any of grades 1 to 12, inclusive, but does not include any private school in which education is primarily conducted in a private home(s). "School" or "School Grounds" includes any building or structure, playground, athletic field, or other areas of school property but does not include unimproved school property. [Basis: "Stationary Diesel Engine ATCM" section 93115, title 17, CA Code of Regulations, subsection (e)(2)(A)(1)] or (e)(2)(B)(2)]

End of Conditions

RECOMMENDATION

Waive the Authority to Construct and issue Chevron a Permit to Operate for the following equipment:

S-3234 Emergency Standby Diesel Engine
Deutz AG engine; Model TCD 4.1 L4
Model Year: 2013; EPA Interim Tier 4/ALT NO_x
Engine family: DDZXL04.1013
CARB Executive Order: U-R-013-0447
4.1 L (250 in^3), 4-cylinder, 115 kW, 154 bhp

_____
Bhagavan R. Krishnaswamy

ENGINEERING EVALUATION REPORT
Plant 10: Chevron Products Company
Application 26684: S-4401 (Ranch Area Maintenance Yard Generator)

BACKGROUND

Chevron Products Company (Chevron) has applied to obtain an Authority to Construct (ATC) and/or Permit to Operate for the following equipment:

S-4401 Prime Diesel Engine Generator
Location: Ranch Area Maintenance Yard
Cummins Inc.; Model QSB7-G9
Model Year: 2015; US EPA/CARB Tier 4 Final
Engine family: FCEXL06.7AAL
CARB Executive Order: U-R-002-0614
6.7 L (409 in^3), 6-cylinder, 210 kW, 282 bhp

S-4401 will provide motive power to a generator that will supply electrical power to the Ranch Area Maintenance Yard. In lieu of providing electricity to the Ranch Area Maintenance Yard from the utility company grid, electricity produced by S-4401 will be used to supply power to trailers housed in the Maintenance Yard for contractors working at the refinery. Chevron has proposed to operate S-4401 will be operated for 8,760 hours/year (24-hours/day; 365 days/year).

EMISSIONS SUMMARY

Table 1 summarizes S-4401's emission rates.

Table 1:
Emission Rates for S-4401

Source	Pollutant				Units
	PM_{10}	NO_x	NHMC	CO	
ATCM	0.01	0.30	0.14	2.6	g/bhp-hr
	0.02	0.40	0.19	3.50	g/kW-hr
CARB certification	0.0075	0.14	0.03	0.00	g/bhp-hr
	0.01	0.19	0.04	0.0	g/kW-hr

S-4401's emissions are summarized in Table 2.

Table 2:
S-4401' Emissions per CARB certification

Pollutant	lbs/day	lbs/year	TPY
PM_{10}	0.11	41	0.021
NO_x	2.11	771	0.39
NHMC	0.44	162	0.08
CO	0.00	0.00	0.00
SO_2	0.10	35.04	0.018

Note:

Per the manufacturer cut sheet, the engine will consume 18.28 gallons of diesel per hour at peak HP. Assuming engine exclusively combusts ULSD (15 ppm sulfur), the density of diesel is 6.76 lb/gal, and that all sulfur in the diesel converts to SO_2, the SO_2 emission rate is 0.004 lbs/hour (18.28 x 15 x 6.76 x 64 ÷ 10E6 x 32). Therefore, the daily and annual SO_2 emissions are 0.10 lbs/day and 35.04 lbs/year, respectively.

For example, PM_{10} emissions in Table 2 were estimated as follows:
Daily emissions = [(0.0075 g/bhp-hour) x (282 bhp) x (24 hours/day)] ÷ (454 g/pound) = 0.11 lb/day
Annual emissions = (0.11 lb/day x 365 days/year) = 41 lb/year (0.021 TPY)

CUMULATIVE INCREASE

The cumulative increase in PM_{10}, NOx, POC, and SO_2 emissions from S-4401 are 0.021 TPY, 0.39 TPY, 0.08 TPY, and 0.018 TPY, respectively. Refer to Table 2.

TOXIC HEALTH RISK SCREENING ANALYSIS (HRSA)

A HRSA was required because S-4401' annual diesel exhaust particulate matter (DEPM) emissions of 41 lb/year exceeded the District's DEPM chronic trigger level of 0.34 lbs/year. The HRSA estimated the maximum cancer risk and the chronic hazard index to be 0.2 in a million and 0.00006, respectively, and concluded the above risk levels are considered to be acceptable.

BACT (BEST AVAILABLE CONTROL TECHNOLOGY)

Per Regulation 2-2-301, BACT is only triggered when emissions from a new source or modified source have the potential to emit 10 lbs or more per highest day. It can be seen from Table 2 above that S-4401 does not trigger BACT.

OFFSETS

Chevron will offset the cumulative emissions increase in PM_{10}, NOx, POC, and SO_2 of 0.021 TPY, 0.39 TPY, 0.08 TPY, and 0.018 TPY, respectively via ERC Certificate # 1166.

NSPS (NEW SOURCE PERFORMANCE STANDARDS)

40 CFR 60, Subpart IIII (NSPS IIII), Standards of Performance for Stationary Compression Ignition Internal Combustion Engines applies to non-fire pump engines such as S-4401 that were manufactured after April 1, 2006. Per §60.4202(a)(2), S-4401 is subject to the emissions standards in 40 CFR 89.112 and 40 CFR 89.113 for all pollutants. Table 3 summarizes emission standards found in 40 CFR 89.112 (a) that apply to S-4401.

Table 3: Emission standards found in Table 1 of 40 CFR 89.112 130 ≤ kW ≤ 225						
Tier #	**Model Year**	**NOx g/kW-hr (g/bhp-hr)**	**HC g/kW-hr**	**NMHC + NOx g/kW-hr**	**CO g/kW-hr**	**PM g/kW-hr**

			(g/bhp-hr)	(g/bhp-hr)	(g/bhp-hr)	(g/bhp-hr)
Tier 1	1996	9.2 (6.86)	1.3 (0.97)	-	11.4 (8.50)	0.54 (0.40)
Tier 2	2003	-	-	6.6 (4.92)	3.5 (2.61)	0.20 (0.15)
Tier 3	2006	-	-	4.0 (2.98)	3.5 (2.61)	0.20 (0.15)

It can be seen from Table 3 that the Tier 3 standards for 2006 model year are most stringent. S-4401' CARB certified emission rates summarized in Table 1 are below their Tier 3 2007 model year counterparts. Therefore, S-4401 complies with the emission standards in NSPS IIII.

40 CFR 89.113 (a) sets forth the following smoke emission standards for non-road CI engines:

- 20% during the acceleration mode;
- 15% during the lugging mode; and
- 50% during the peaks in either the acceleration or lugging modes.

The opacity standards in 40 CFR 89.113, it appears, apply to mobile (and not stationary) non-road CI engines. Therefore, S-4401 is not subject to the above standards. Instead, S-4401 is subject to the opacity standards in Regulation 6, Rule 1, which is discussed in the later sections of this report.

Per §60.4207(b), S-4401 is subject to the following diesel fuel requirements in 40 CFR 80.510(b):

- Sulfur content ≤ 15 ppm maximum
- Cetane index = 40 or maximum aromatic content of 35% by volume

Diesel fuel sold in California meets the above standards. Therefore, S-4401 complies with the diesel fuel requirements in NSPS IIII.

NESHAP (NATIONAL EMISSION STANDARDS FOR HAZARDOUS AIR POLLUTANTS)

S-4401 is subject to 40 CFR 63, Subpart ZZZZ (MACT ZZZZ), National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines because the engine will be constructed (~installed) on/after June 12, 2006. Per §63.6590(c)(6), "new" sources such as S-4401 are required to meet the requirements in MACT ZZZZ by meeting the requirements in NSPS IIII. As previously discussed, S-4401 complies with NSPS IIII and therefore, complies with MACT ZZZZ as well.

CALIFORNIA AIR RESOURCES BOARD (CARB) STATIONARY DIESEL ENGINE ATCM

Table 4 on page 30 in CARB's Airborne Toxic Control Measure (ATCM) dated May 19, 2011 summarizes the emission standards for new stationary prime diesel-fueled CI engines > 50 BHP. Table 4 below compares S-4401' CARB certified emission rates to the applicable emission standards contained in Table 4 of the ATCM for 2014+ model year engines.

Table 4: Comparison of emission rates CARB E.O. vs. ATCM 175 ≤ HP < 750 (130 ≤ kW < 560)		
Pollutant	**S-4401's CARB certified emission rates g/bhp-hr (g/kW-hr)**	**CARB ATCM emission rates g/bhp-hr (g/kW-hr)**
PM	0.0075 (0.01)	0.01 (0.02)
NOx	0.14 (0.19)	0.30 (0.40)
NMHC	0.03 (0.04)	0.14 (0.19)
CO	0.0 (0.0)	2.6 (3.5)

It can be seen from Table 4 that S-4401 complies with the applicable emission standards in CARB's ATCM.

STATEMENT OF COMPLIANCE

Regulation 6, Rule 1 "Particulate Matter – General Requirements":

Regulation 6-1-303.1 limits opacity from internal combustion engines of less than 25 liters (1,500 in^3) displacement, or from any engine used solely as a standby source of motive power to Ringelmann 2. S-4401 will be used as a prime engine. As part of their routine inspections, the District's Compliance & Enforcement staff will confirm if S-4401 produces visible emissions or results in fallout that would have opacities in excess of 40%.

S-4401 will comply with the particulate weight limitation in Regulation 6-1-310 of 0.15 gr/dscf as discussed below. During normal operation products of combustion will exhaust out of S-4401's stack at 1,162 ft^3/minute (836ºF)[19], which translates to about 475 SCFM[20]. Per Table 2, daily PM emissions from S-4401 are estimated to be 0.11 lbs/day. Assuming the exhaust gases from S-4401 contain negligible moisture, PM emissions will

[19] Per HRSA form provided by Chevron dated June 26, 2015.
[20] 475 SCFM = 1,162 x [(460 + 70) ÷ (460 + 836)]

exhaust at a rate of 0.001 gr/dscf[21], which is below the Regulation 6-1-310 outlet grain loading rate limit.

Regulation 9, Rule 1 "Inorganic Gaseous Pollutants – Sulfur Dioxide":

S-4401 is subject to and will comply with the SO_2 limitations of 9-1-301 and 9-1-304 as discussed below.
Per Regulation 9-1-501, area monitoring to demonstrate compliance with the ground level SO_2 concentration requirements in excess of 0.5 ppm continuously for 3 consecutive minutes or 0.25 ppm averaged over 60 consecutive minutes, or 0.05 ppm averaged over 24 hours of Regulation 9-1-301 is at the APCO's discretion. Because S-4401 will not emit large quantities of SO_2 emissions (estimated at 0.018 TPY; refer to Table 2) it is unlikely that the APCO will require Chevron to conduct ground level monitoring.
Regulation 9-1-304 limits the sulfur content in liquid fuel burnt at S-4401 to not exceed 0.5% by weight. S-4401 will comply with the above requirement because it will burn California Low Sulfur diesel fuel which has 0.0015% by weight sulfur.

Regulation 9, Rule 8 "Inorganic Gaseous Pollutants – Nitrogen Oxides and Carbon Monoxide from Stationary Internal Combustion Engines":

S-4401 is a prime diesel engine and is subject to the emission limits in Regulation 9-8-304.2. Specifically, S-4401 is subject to the NOx and CO emission limits (corrected to 15% oxygen, dry basis) of 110 ppmv and 310 ppmv, respectively.
The NOx and CO mass emission rates for engines at the Reg. 9-8-304.2 emission limits is 32 lbs/day and 55 lbs/day, respectively.

For example, the NOx mass emission rate for engines meeting the 110 ppmvd @ 15% O_2 is calculated as follows:
NOx concentration @ 0% O_2 = [(20.9 – 0) ÷ (20.9 – 15)] x 110 = 390 ppmvd @ 0% O_2
NOx emissions = [(390 x 46 x 475 x 1,440)] ÷ [(10E6 x 379.4)] = 32 lbs/day

Per Table 2, daily NOx emissions from S-4401 are estimated to be 2.11 lbs/day. Therefore, S-4401 will comply with the NOx emissions limit in Reg. 9-8-304.2 i.e., NOx emissions are well below 32 lbs/day. S-4401 is not expected to emit any CO. Therefore, S-4401 will comply with the CO emissions limit in Reg. 9-8-304.2 i.e., CO emissions (if any) would be well below 55 lbs/day.

S-4401 will be located greater than 1,000 feet from the nearest K-12 school and is therefore not subject to the public notification requirements of Regulation 2-1-412.

The operation of S-4401 will not trigger a PSD review.

[21] 0.001 gr/dscf = [(0.11 x 7,000) ÷ (475 x 1,440)]

California Environmental Quality Act (CEQA):

The Air District has determined that the issuance of this Authority to Construct is exempt from CEQA because the Air District's approval was "ministerial" and therefore exempt from CEQA under CEQA § 21080(b)(1). Permits prepared in accordance with the Permit Handbook are deemed "ministerial" for the purposes of CEQA. Permit applications which are reviewed following the specific procedures, fixed standards and objective measurements set forth in the District's Permit Handbook will be classified as ministerial and will accordingly be exempt from CEQA review per Regulation 2-1-311. This permit application was reviewed as described in Permit Handbook Chapter 2.3.1 for Stationary Diesel Engines.

The Air District has also determined that the issuance of this Authority to Construct is exempt from CEQA per District Regulation 2-1-312.11 "Permit applications for a proposed new or modified source or sources or for process changes which will satisfy the "No Net Emission Increase" provisions of District Regulation 2, Rule 2, and for which there is no possibility that the project may have any significant environmental effect in connection with any environmental media or resources other than air quality." The applicant has included in its permit application CEQA-related information (CEQA Appendix H) that demonstrates with certainty that the project has no potential for resulting in any significant environmental impacts. The Air District's action was also exempt under the "common sense" exemption. (Guidelines § 15061(b)(3)).

PERMIT CONDITIONS

(# 26127)

1. The owner/operator of S-4401 "Ranch Area Maintenance Yard Prime Diesel Engine Generator" shall ensure the diesel exhaust particulate matter (DEPM) emission rate does not exceed 0.01 g/kW-hour or mass rate emissions no greater than 0.00458 pounds per hour. (Basis: Health Risk Screening Analysis)

2. In order to demonstrate compliance with the DEPM emission rate in part 1 of this permit condition, the owner/operator of S-4401 shall perform a District approved source test within 60-days of startup and once every 5-years thereafter to measure the total suspended particulate matter via EPA Method 5 when operating the engine at conditions representative of normal operations.
(Basis: Regulation 2-1-403, Health Risk Screening Analysis)

3. The owner/operator shall submit a source test protocol for review/approval to the Manager of the District's Source Test Section prior to conducting source tests at S-4401. The owner/operator shall describe the source test methods that will be used to determine DEPM emissions. (Basis: Regulation 2-1-403)

4. The owner/operator shall notify the Manager of the District's Source Test Section at least fifteen (15) days prior to conducting the source tests required by this

permit condition in order to allow District staff the option of observing the source tests. Within 60 days of test completion, the owner/operator shall submit a comprehensive report of the test results to the Manager of the District's Source Test Section for review and disposition. Records of the source test results and any related correspondence with the District's Source Test Section shall be retained on-site by the owner/operator for a minimum of 5 years from the date of the document and shall be made available to District staff upon request. (Basis: Regulation 2-6-503)

5. The owner/operator of S-4401 shall maintain fuel usage records in a District-approved log for at least 5-years from the date of entry. Log entries shall be retained by the owner/operator on-site, either at a central location or at the engine's location, and shall be made available to the District staff for review upon request.
   (Basis: Regulation 2-6-501)

End of Conditions

RECOMMENDATION

Issue Chevron an Authority to Construct for the following equipment:

S-4401 Prime Diesel Engine Generator
Location: Ranch Area Maintenance Yard
Cummins Inc.; Model QSB7-G9
Model Year: 2015; US EPA/CARB Tier 4 Final
Engine family: FCEXL06.7AAL
CARB Executive Order: U-R-002-0614
6.7 L (409 in^3), 6-cylinder, 210 kW, 282 bhp

_____
Bhagavan R. Krishnaswamy